

**Revision A:**

- MUZ-FH50VE- [E1] has been added.

Please void OBH624.

# OUTDOOR UNIT SERVICE MANUAL

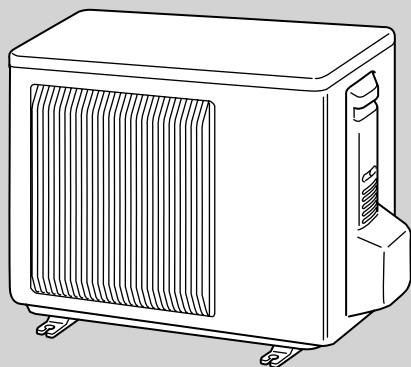


**No. OBH624  
REVISED EDITION-A**

## Models

**MUZ-FH25VE** - [E1]  
**MUZ-FH35VE** - [E1]  
**MUZ-FH50VE** - [E1]

Indoor unit service manual  
MSZ-FH•VE Series (OBH623)



**MUZ-FH25VE  
MUZ-FH35VE**

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**PARTS CATALOG (OBB624)**

**NOTE:**

RoHS compliant products have <G> mark on the spec name plate.



## Use the specified refrigerant only

### **Never use any refrigerant other than that specified.**

Doing so may cause a burst, an explosion, or fire when the unit is being used, serviced, or disposed of.

Correct refrigerant is specified in the manuals and on the spec labels provided with our products.

We will not be held responsible for mechanical failure, system malfunction, unit breakdown or accidents caused by failure to follow the instructions.

### **<Preparation before the repair service>**

- Prepare the proper tools.
- Prepare the proper protectors.
- Provide adequate ventilation.
- After stopping the operation of the air conditioner, turn off the power-supply breaker and remove the power plug.
- Discharge the capacitor before the work involving the electric parts.

### **<Precautions during the repair service>**

- Do not perform the work involving the electric parts with wet hands.
- Do not pour water into the electric parts.
- Do not touch the refrigerant.
- Do not touch the hot or cold areas in the refrigeration cycle.
- When the repair or the inspection of the circuit needs to be done without turning off the power, exercise great caution not to touch the live parts.

### **Revision A:**

- MUZ-FH50VE- [E1] has been added.

# 1

# TECHNICAL CHANGES

MUZ-FH25VE -E1

MUZ-FH35VE -E1

MUZ-FH50VE -E1

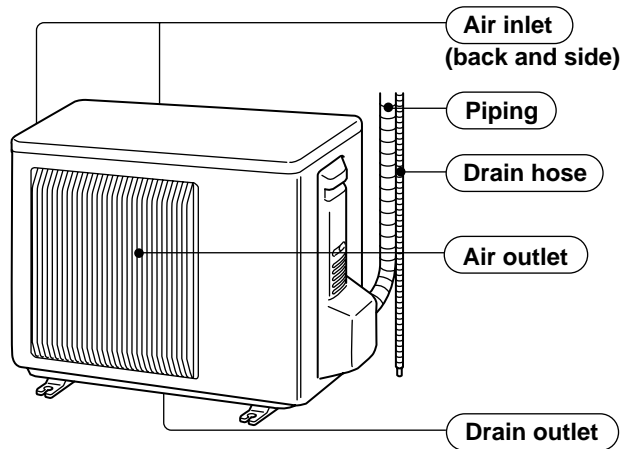
1. New model

# 2

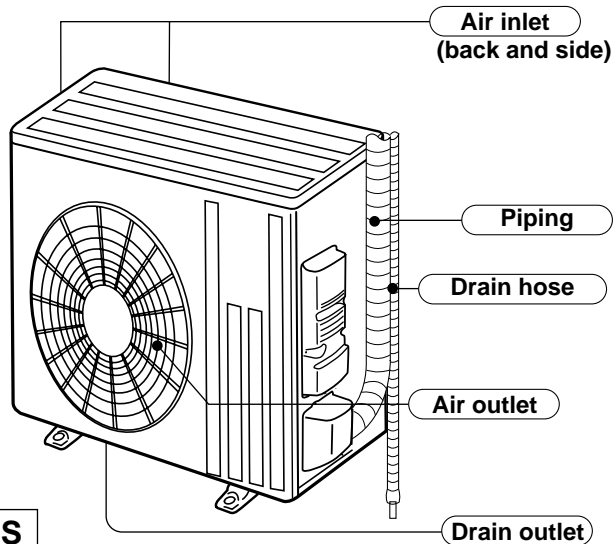
# PART NAMES AND FUNCTIONS

MUZ-FH25VE

MUZ-FH35VE



MUZ-FH50VE



## ACCESSORIES

|              |  |
|--------------|--|
| Model        | MUZ-FH25VE<br>MUZ-FH35VE<br>MUZ-FH50VE |
| Drain socket | 1                                      |

# 3

# SPECIFICATION

| Outdoor model                               |                            |            |                    | MUZ-FH25VE                 | MUZ-FH35VE      |      |
|---|----------------------------|------------|--------------------|----------------------------|-----------------|------|
| Power supply                                |                            |            |                    | Single phase, 230 V, 50 Hz |                 |      |
| Capacity<br>Rated frequency (Min.-Max.)     | Cooling                    | kW         | 2.5 (1.4 - 3.5)    |                            | 3.5 (0.8 - 4.0) |      |
|   | Heating                    |            | 3.2 (1.8 - 5.5)    |                            | 4.0 (1.0 - 6.3) |      |
| Breaker Capacity                            |                            |            | A 10               |                            |                 |      |
| Electrical data                             | Power input *1 (Total)     | Cooling    | W 485              |                            | 820             |      |
|   |                            | Heating    | 580                |                            | 800             |      |
|   | Running current *1 (Total) | Cooling    | A 2.6              |                            | 3.9             |      |
|   |                            | Heating    | 2.9                |                            | 3.8             |      |
|   | Power factor *1 (Total)    | Cooling    | % 81               |                            | 91              |      |
|   |                            | Heating    | 86                 |                            | 91              |      |
| Starting current *1 (Total)                 |                            | A          | 2.9                |                            | 3.9             |      |
| Coefficient of performance (COP) *1 (Total) |                            | Cooling    | 5.15               |                            | 4.27            |      |
|   |                            | Heating    | 5.52               |                            | 5.00            |      |
| Compressor                                  |                            | Model      |                    | SNB140FRUMT                |                 |      |
|   |                            | Output     |                    | W 950                      |                 |      |
|   |                            | Current *1 | Cooling            | A 2.04                     |                 | 3.32 |
|   |                            |            | Heating            | 2.34                       |                 | 3.22 |
| Refrigeration oil (Model)                   |                            | L          | 0.35 (FV50S)       |                            |                 |      |
| Fan motor                                   |                            | Model      |                    | RC0J50-CI                  |                 |      |
|   |                            | Current *1 | Cooling            | A 0.28                     |                 | 0.30 |
|   |                            |            | Heating            | 0.28                       |                 | 0.30 |
| Dimensions W x H x D                        |                            |            | mm 800 x 550 x 285 |                            |                 |      |
| Weight                                      |                            |            | kg 37              |                            |                 |      |
| Special remarks                             | Dehumidification           |            | Cooling            | L/h 0.2                    |                 | 0.8  |
|   | Air flow *1                | Cooling    | High               | 1,806                      |                 |      |
|   |                            |            | Low                | 1,038                      |                 |      |
|   |                            | Heating    | High               | m <sup>3</sup> /h 2,016    |                 |      |
|   |                            |            | Med.               | 1,710                      |                 |      |
|   |                            |            | Low                | 1,326                      |                 |      |
|   | Sound level *1             | Cooling    |                    | dB(A) 46                   |                 | 49   |
|   |                            | Heating    |                    | 49                         |                 | 50   |
|   | Fan speed                  | Cooling    | High               | 810                        |                 |      |
|   |                            |            | Low                | 490                        |                 |      |
|   |                            | Heating    | High               | 900                        |                 |      |
|   |                            |            | Med.               | 770                        |                 |      |
| Low   |                            |            | 610                |                            |                 |      |
| Fan speed regulator                         |                            |            | 3                  |                            |                 |      |
| Refrigerant filling capacity (R410A)        |                            |            | kg 1.15            |                            |                 |      |

**NOTE:** Test conditions are based on ISO 5151.

Cooling: Indoor Dry-bulb temperature 27°C  
Outdoor Dry-bulb temperature 35°C

Wet-bulb temperature 19°C

Heating: Indoor Dry-bulb temperature 20°C  
Outdoor Dry-bulb temperature 7°C

Wet-bulb temperature 6°C

Refrigerant piping length (one way): 5 m

\*1 Measured under rated operating frequency.



| Outdoor model                               |                            |         |         | MUZ-FH50VE                 |       |  |
|---|----------------------------|---------|---------|----------------------------|-------|--|
| Power supply                                |                            |         |         | Single phase, 230 V, 50 Hz |       |  |
| Capacity                                    |                            | Cooling | kW      | 5.0 (1.9 - 6.0)            |       |  |
| Rated frequency (Min. - Max.)               |                            | Heating |         | 6.0 (1.7 - 8.7)            |       |  |
| Breaker Capacity                            |                            |         | A       | 16                         |       |  |
| Electrical data                             | Power input *1 (Total)     |         | Cooling | W                          | 1,380 |  |
|   |                            |         | Heating |                            | 1,480 |  |
|   | Running current *1 (Total) |         | Cooling | A                          | 6.1   |  |
|   |                            |         | Heating |                            | 6.5   |  |
|   | Power factor *1 (Total)    |         | Cooling | %                          | 98    |  |
|   |                            | Heating | 98      |                            |       |  |
| Starting current *1 (Total)                 |                            |         | A       | 6.5                        |       |  |
| Coefficient of performance (COP) *1 (Total) |                            |         | Cooling | 3.62                       |       |  |
|   |                            |         | Heating | 4.05                       |       |  |
| Compressor                                  |                            | Model   |         | SNB172FEKMT                |       |  |
|   |                            | Output  | W       | 1,200                      |       |  |
| Current *1                                  |                            | Cooling | A       | 4.98                       |       |  |
|   |                            | Heating |         | 5.37                       |       |  |
| Refrigeration oil (Model)                   |                            | L       |         | 0.40(FV50S)                |       |  |
| Fan motor                                   |                            | Model   |         | RC0J60-BC                  |       |  |
| Current *1                                  |                            | Cooling | A       | 0.83                       |       |  |
|   |                            | Heating |         | 0.84                       |       |  |
| Dimensions W x H x D                        |                            |         | mm      | 840 x 880 x 330            |       |  |
| Weight                                      |                            |         | kg      | 55                         |       |  |
| Special remarks                             | Dehumidification           |         | Cooling | L/h                        | 2.0   |  |
|   | Air flow *1                | Cooling | High    | m <sup>3</sup> /h          | 3,006 |  |
|   |                            |         | Med.    |                            | 3,006 |  |
|   |                            |         | Low     |                            | 1,626 |  |
|   |                            | Heating | High    |                            | 2,892 |  |
|   |                            |         | Med.    |                            | 2,892 |  |
|   |                            |         | Low     |                            | 2,280 |  |
|   | Sound level *1             |         | Cooling | dB(A)                      | 51    |  |
|   |                            |         | Heating |                            | 54    |  |
|   | Fan speed                  | Cooling | High    | rpm                        | 840   |  |
|   |                            |         | Med.    |                            | 840   |  |
|   |                            |         | Low     |                            | 480   |  |
|   |                            | Heating | High    |                            | 810   |  |
|   |                            |         | Med.    |                            | 810   |  |
|   |                            |         | Low     |                            | 650   |  |
| Fan speed regulator                         |                            |         |         | 3                          |       |  |
| Refrigerant filling capacity (R410A)        |                            |         | kg      | 1.55                       |       |  |

**NOTE:** Test conditions are based on ISO 5151.

Cooling: Indoor Dry-bulb temperature 27°C

Wet-bulb temperature 19°C

Outdoor Dry-bulb temperature 35°C

Heating: Indoor Dry-bulb temperature 20°C

Wet-bulb temperature 6°C

Outdoor Dry-bulb temperature 7°C

Refrigerant piping length (one way): 5 m

\*1 Measured under rated operating frequency.



**Specifications and rated conditions of main electric parts**

| Item                    |  | Model              | MUZ-FH25VE                     | MUZ-FH35VE |
|-------------------------|--|--------------------|--------------------------------|------------|
| Smoothing capacitor     |  | (C61, C62)         | 600 $\mu$ F/ 620 $\mu$ F 420 V |            |
| Diode module            |  | (DB61)             | 15 A 600 V                     |            |
| Fuse                    |  | (F61)              | T20AL250V                      |            |
|                         |  | (F701, F801, F901) | T3.15AL250V                    |            |
| Power module            |  | (IC700)            | 15 A 600 V                     |            |
|                         |  | (IC932)            | 8A600V                         |            |
| Expansion valve coil    |  | (LEV)              | 12 V DC                        |            |
| Reactor                 |  | (L61)              | 23 mH                          |            |
| Power factor controller |  | (IC820)            | 20A 600V                       |            |
| Circuit protection      |  | (PTC64, PTC65)     | 33 $\Omega$                    |            |
| Terminal block          |  | (TB)               | 5 P                            |            |
| Relay                   |  | (X63)              | 3 A 250 V                      |            |
|                         |  | (X64)              | 20 A 250 V                     |            |
|                         |  | (X69)              | 10A 230V                       |            |
| R.V.coil                |  | (21S4)             | 220 - 240 V AC                 |            |

**Specifications and rated conditions of main electric parts**

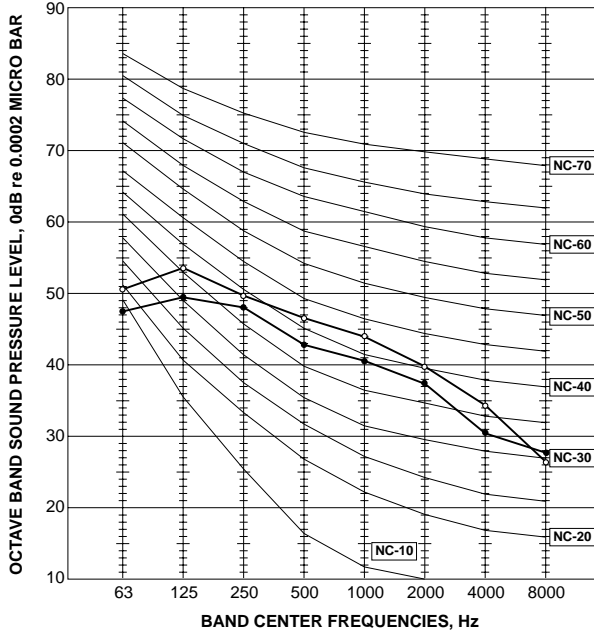
| Item                 |  | Model              | MUZ-FH50VE        |
|----------------------|--|--------------------|-------------------|
| Smoothing capacitor  |  | (CB1, CB2, CB3)    | 560 $\mu$ F 450 V |
| Fuse                 |  | (F601, F880, F901) | T3.15AL250 V      |
| IGBT module          |  | (IC932)            | 5 A 600 V         |
|                      |  | (IC700)            | 20 A 600 V        |
| Expansion valve coil |  | (LEV)              | 12 V DC           |
| Reactor              |  | (L)                | 340 $\mu$ H       |
| Diode module         |  | (IC820)            | 20 A 600 V        |
| Circuit protection   |  | (PTC64, PTC65)     | 33 $\Omega$       |
| Terminal block       |  | (TB1, TB2)         | 3 P               |
| Relay                |  | (X64)              | 20 A 250 V        |
|                      |  | (X65)              | 20 A 250 V        |
|                      |  | (X69)              | 10 A 250 V        |
|                      |  | (X601)             | 3 A 250 V         |
|                      |  | (X602)             | 3 A 250 V         |
| R.V. coil            |  | (21S4)             | 220 - 240 V AC    |

# 4

# NOISE CRITERIA CURVES

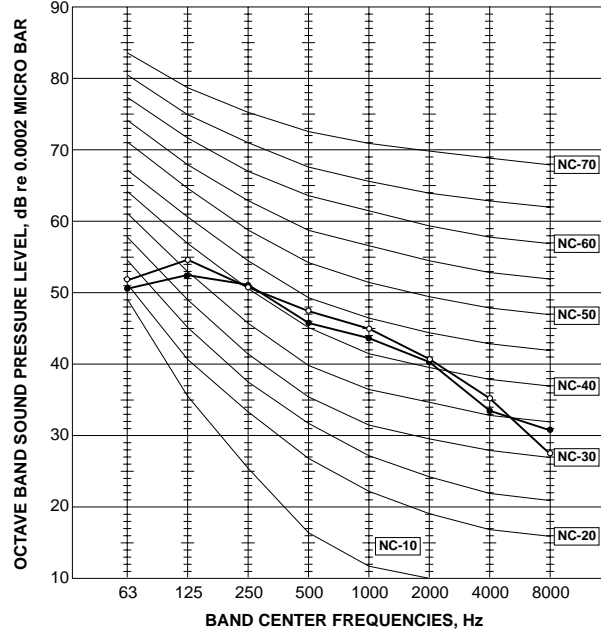
## MUZ-FH25VE

| FUNCTION | SPL(dB(A)) | LINE |
|----------|------------|------|
| COOLING  | 46         | ●—●  |
| HEATING  | 49         | ○—○  |



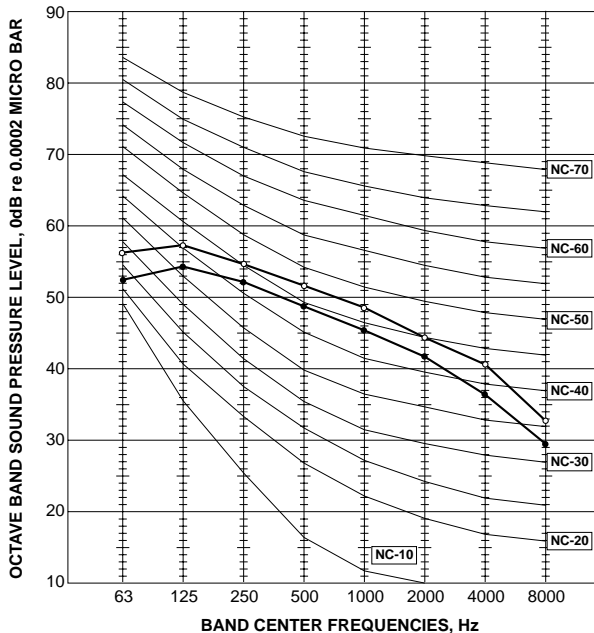
## MUZ-FH35VE

| FUNCTION | SPL(dB(A)) | LINE |
|----------|------------|------|
| COOLING  | 49         | ●—●  |
| HEATING  | 50         | ○—○  |



## MUZ-FH50VE

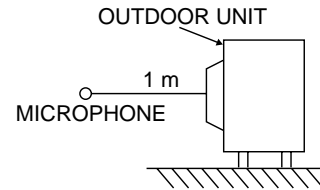
| FUNCTION | SPL(dB(A)) | LINE |
|----------|------------|------|
| COOLING  | 51         | ●—●  |
| HEATING  | 54         | ○—○  |



### Test conditions

Cooling: Dry-bulb temperature 35°C

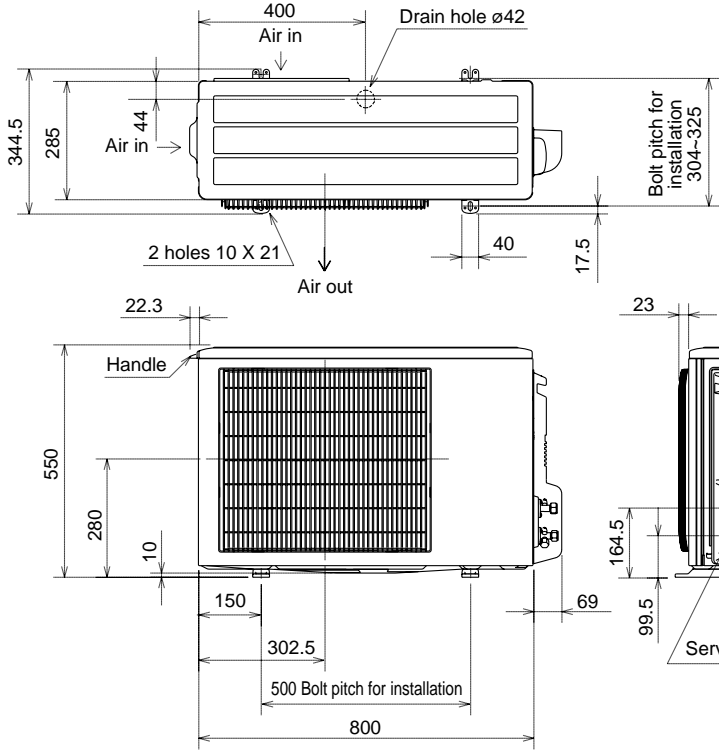
Heating: Dry-bulb temperature 7°C Wet-bulb temperature 6°C



# 5

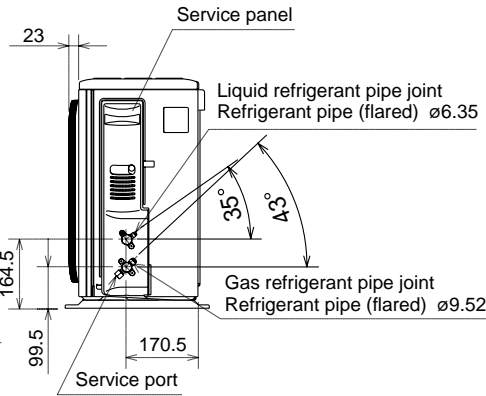
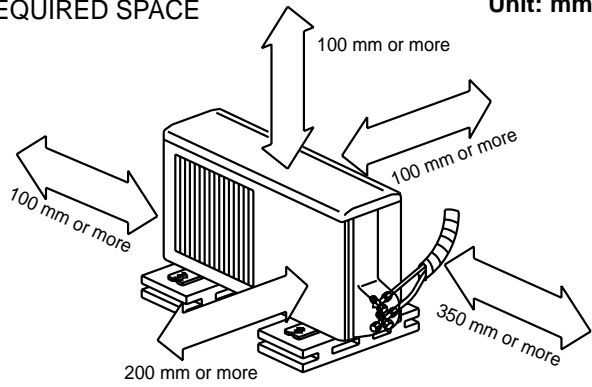
# OUTLINES AND DIMENSIONS

## MUZ-FH25VE MUZ-FH35VE

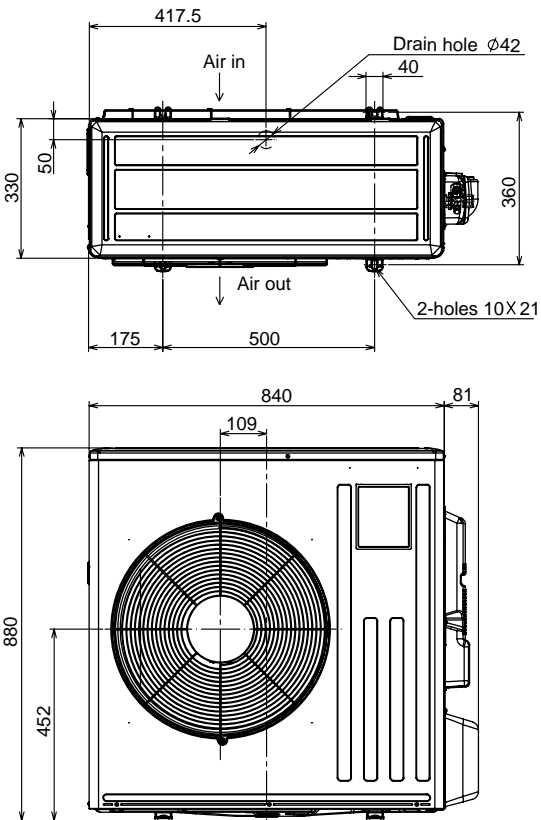


### REQUIRED SPACE

Unit: mm

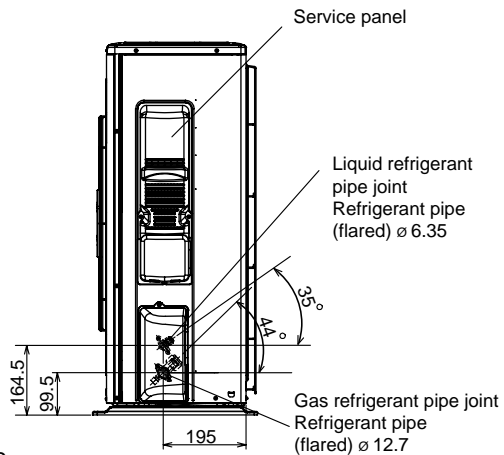
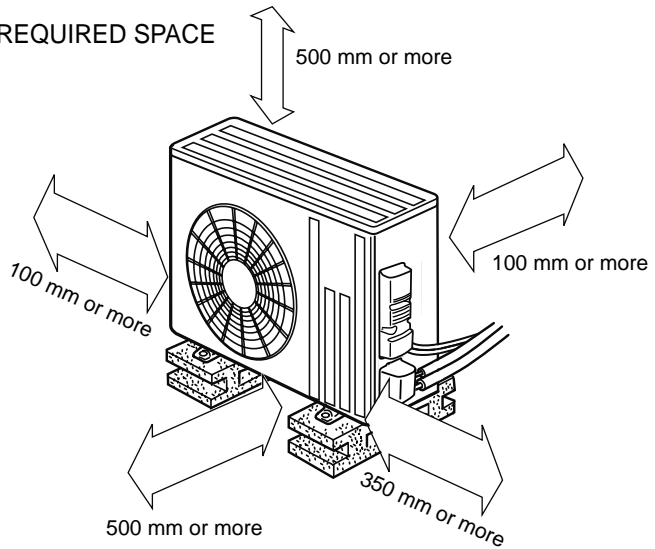


## MUZ-FH50VE



### REQUIRED SPACE

500 mm or more



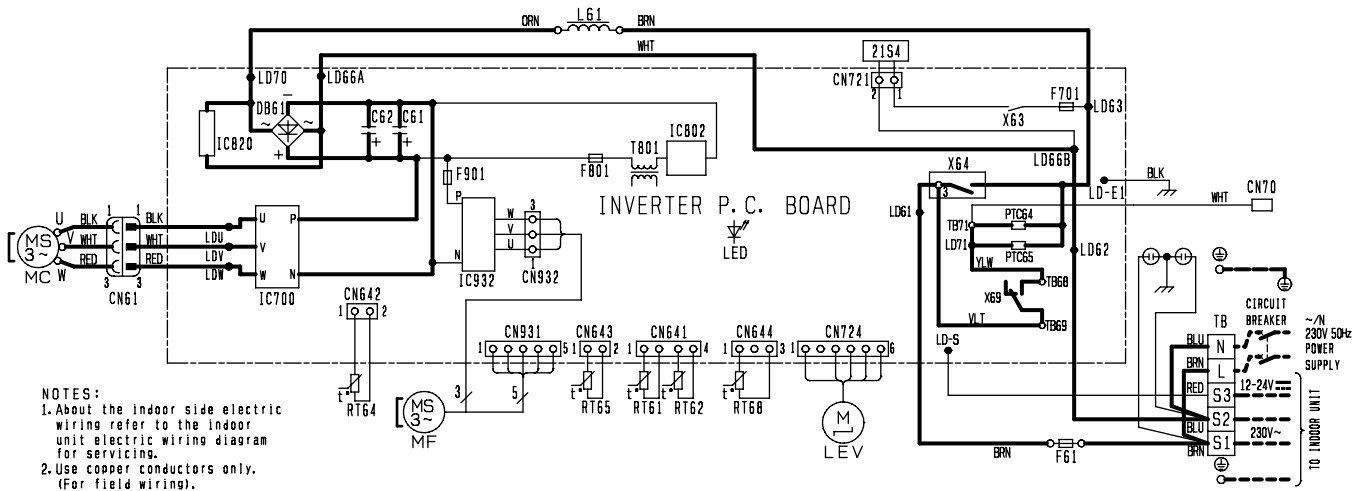
## OBH624A



# 6

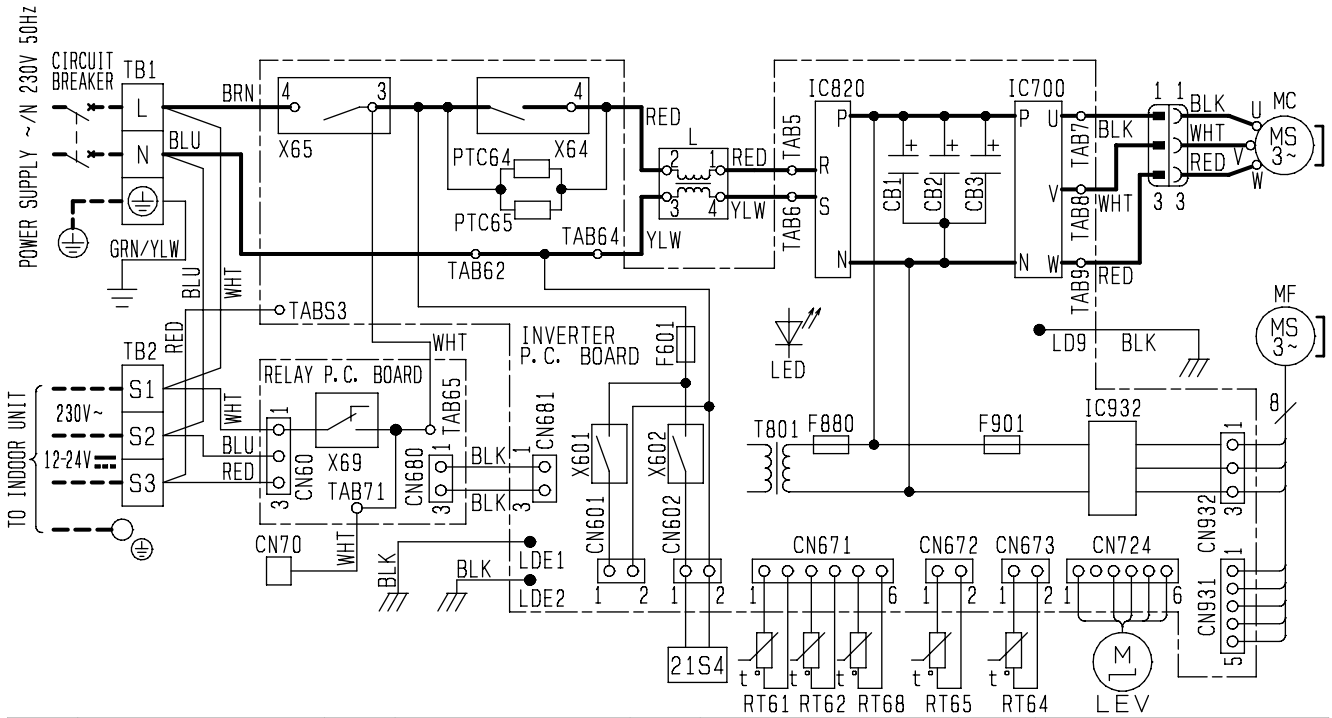
# WIRING DIAGRAM

MUZ-FH25VE  
MUZ-FH35VE



| SYMBOL              | NAME                | SYMBOL       | NAME                       | SYMBOL        | NAME                                     |
|---------------------|---------------------|--------------|----------------------------|---------------|--|
| CN70                | CONNECTOR           | LEV          | EXPANSION VALVE COIL       | RT65          | AMBIENT TEMP. THERMISTOR                 |
| C61, C62            | SMOOTHING CAPACITOR | L61          | REACTOR                    | RT68          | OUTDOOR HEAT EXCHANGER TEMP. THERMISTOR. |
| DB61                | DIODE MODULE        | MC           | COMPRESSOR                 | TB            | TERMINAL BLOCK                           |
| F61                 | FUSE (T20AL250V)    | MF           | FAN MOTOR                  | T801          | TRANSFORMER                              |
| F701, F801, F901    | FUSE (T3.15AL250V)  | PTC64, PTC65 | CIRCUIT PROTECTION         | X63, X64, X69 | RELAY                                    |
| IC700, IC820, IC932 | POWER MODULE        | RT61         | DEFROST THERMISTOR         | 21S4          | REVERSING VALVE COIL                     |
| IC802               | POWER DEVICE        | RT62         | DISCHARGE TEMP. THERMISTOR |               |  |
| LED                 | LED                 | RT64         | FIN TEMP. THERMISTOR       |               |  |

# MUZ-FH50VE



| SYMBOL | NAME                | SYMBOL | NAME                 | SYMBOL   | NAME                                    | SYMBOL | NAME                          |
|--------|---------------------|--------|----------------------|----------|---|--------|-------------------------------|
| CB1~3  | SMOOTHING CAPACITOR | L      | REACTOR              | RT62     | DISCHARGE TEMP. THERMISTOR              | X602   | RELAY                         |
| CN70   | CONNECTOR           | LED    | LED                  | RT64     | FIN TEMP. THERMISTOR                    | X64    | RELAY                         |
| F601   | FUSE (T3. 15A/250V) | LEV    | EXPANSION VALVE COIL | RT65     | AMBIENT TEMP. THERMISTOR                | X65    | RELAY                         |
| F880   | FUSE (T3. 15A/250V) | MC     | COMPRESSOR           | RT68     | OUTDOOR HEAT EXCHANGER TEMP. THERMISTOR | X69    | RELAY                         |
| F901   | FUSE (T3. 15A/250V) | MF     | FAN MOTOR            |          |   | 21S4   | REVERSING VALVE SOLENOID COIL |
| IC700  | IGBT Module         | PTC64  | CIRCUIT PROTECTION   | TB1, TB2 | TERMINAL BLOCK                          |        |                               |
| IC820  | DIODE Module        | PTC65  | CIRCUIT PROTECTION   | T801     | TRANSFORMER                             |        |                               |
| IC932  | IGBT Module         | RT61   | DEFROST THERMISTOR   | X601     | RELAY                                   |        |                               |

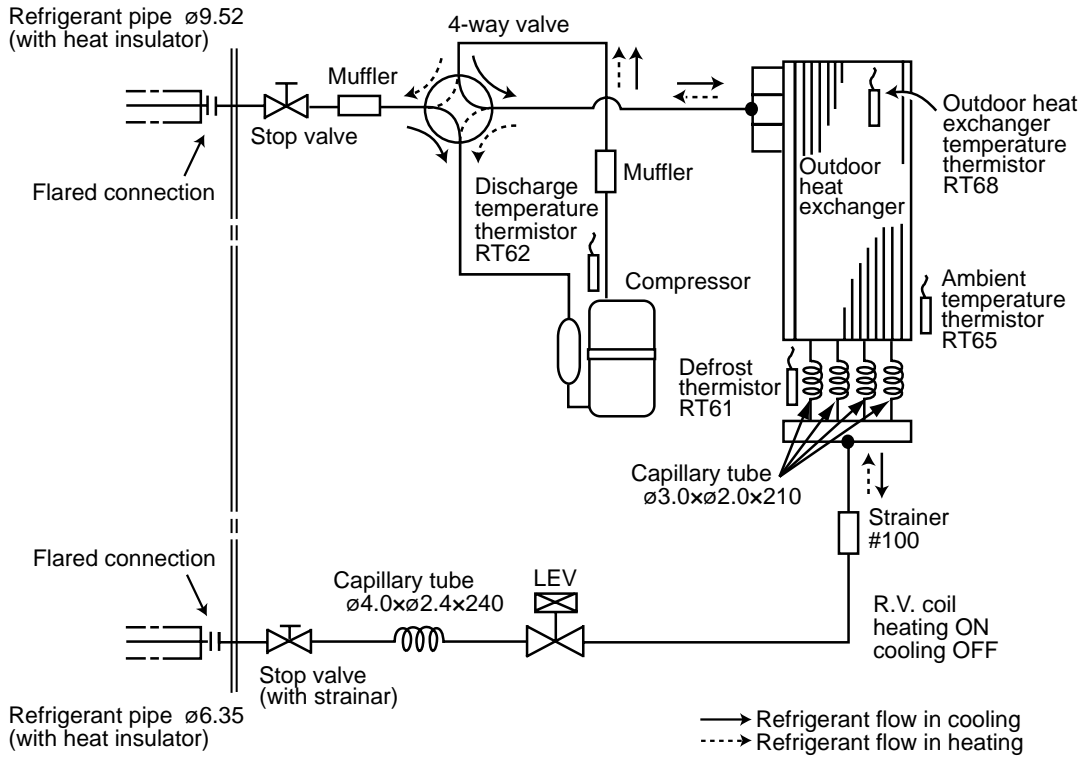
NOTES 1. About the indoor side electric wiring, refer to the indoor unit electric wiring diagram for servicing.  
 2. Use copper conductors only (for field wiring). 3. Symbols indicate, : terminal block

# 7

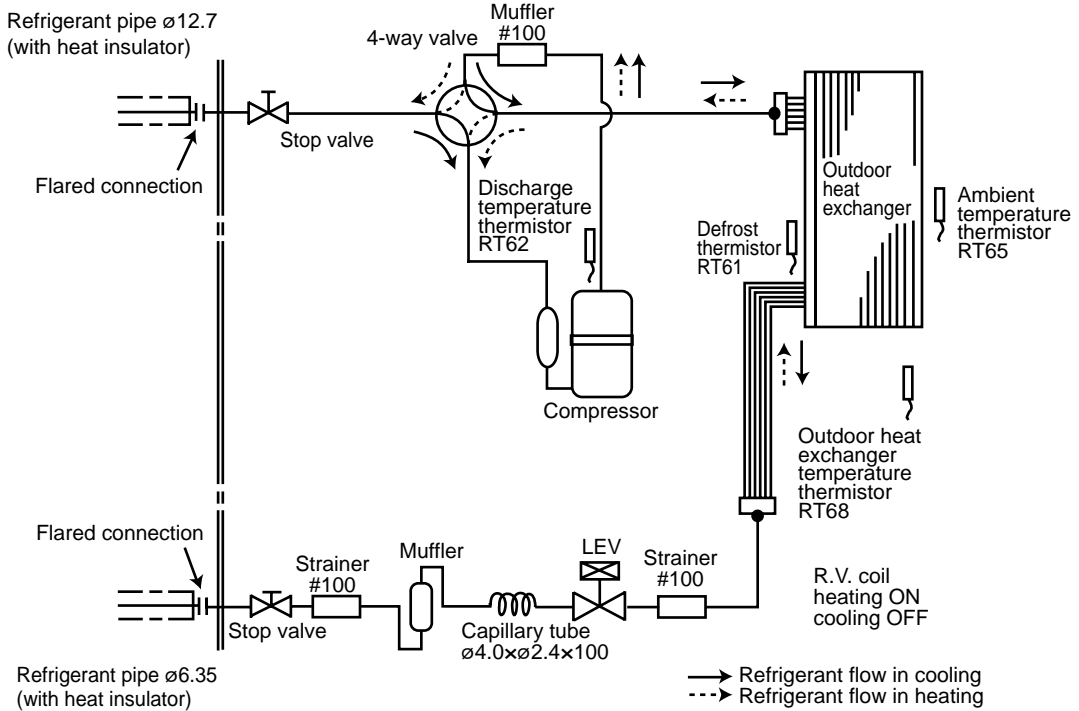
# REFRIGERANT SYSTEM DIAGRAM

MUZ-FH25VE  
MUZ-FH35VE

Unit: mm

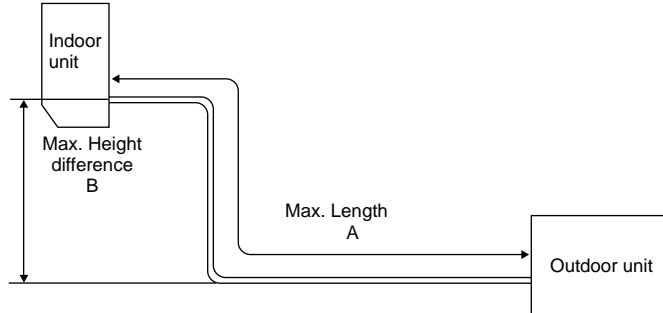


MUZ-FH50VE



## MAX. REFRIGERANT PIPING LENGTH and MAX. HEIGHT DIFFERENCE

| Model              | Refrigerant piping: m |                          | Piping size O.D: mm |        |
|--------------------|-----------------------|--------------------------|---------------------|--------|
|                    | Max. Length A         | Max. Height difference B | Gas                 | Liquid |
| <b>MUZ-FH25/35</b> | 20                    | 12                       | 9.52                | 6.35   |
| <b>MUZ-FH50</b>    | 30                    | 15                       | 12.7                | 6.35   |



## ADDITIONAL REFRIGERANT CHARGE (R410A: g)

| Model              | Outdoor unit precharged | Refrigerant piping length (one way) |     |     |      |      |      |      |      |      |      |
|--------------------|-------------------------|-------------------------------------|-----|-----|------|------|------|------|------|------|------|
|                    |                         | 7 m                                 | 8 m | 9 m | 10 m | 11 m | 12 m | 13 m | 14 m | 15 m | 20 m |
| <b>MUZ-FH25/35</b> | 1,150                   | 0                                   | 30  | 60  | 90   | 120  | 150  | 180  | 210  | 240  | 390  |

Calculation:  $X \text{ g} = 30 \text{ g/m} \times (\text{Refrigerant piping length (m)} - 7)$

| Model           | Outdoor unit precharged | Refrigerant piping length (one way) |      |      |      |      |      |
|-----------------|-------------------------|-------------------------------------|------|------|------|------|------|
|                 |                         | 7 m                                 | 10 m | 15 m | 20 m | 25 m | 30 m |
| <b>MUZ-FH50</b> | 1,550                   | 0                                   | 60   | 160  | 260  | 360  | 460  |

Calculation:  $X \text{ g} = 20 \text{ g/m} \times (\text{Refrigerant piping length (m)} - 7)$

**MUZ-FH25VE**  
**MUZ-FH35VE**  
**MUZ-FH50VE**

The standard specifications apply only to the operation of the air conditioner under normal conditions. Since operating conditions vary according to the areas where these units are installed, the following information has been provided to clarify the operating characteristics of the air conditioner under the conditions indicated by the performance curve.

**(1) GUARANTEED VOLTAGE**

198 ~ 264 V, 50 Hz

**(2) AIR FLOW**

Air flow should be set at MAX.

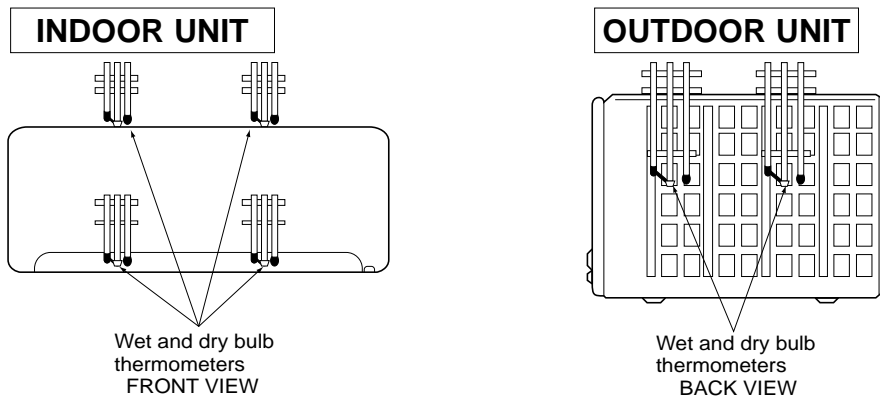
**(3) MAIN READINGS**

- |  |         |           |
|--|---------|-----------|
| (1) Indoor intake air wet-bulb temperature:  | °C [WB] | } Cooling |
| (2) Indoor outlet air wet-bulb temperature:  | °C [WB] |           |
| (3) Outdoor intake air dry-bulb temperature: | °C [DB] |           |
| (4) Total input:                             | W       | } Heating |
| (5) Indoor intake air dry-bulb temperature:  | °C [DB] |           |
| (6) Outdoor intake air wet-bulb temperature: | °C [WB] |           |
| (7) Total input:                             | W       |           |

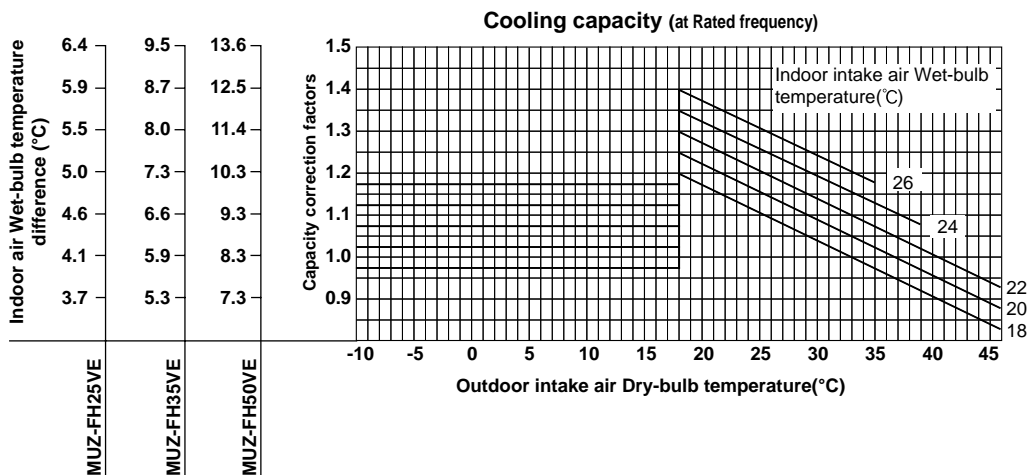
Indoor air wet and dry bulb temperature difference on the left side of the following chart shows the difference between the indoor intake air wet and dry bulb temperature and the indoor outlet air wet and dry bulb temperature for your reference at service.

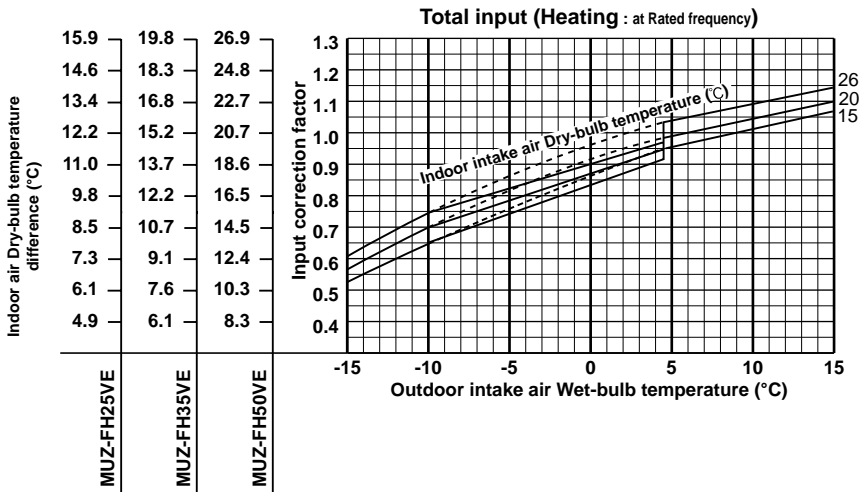
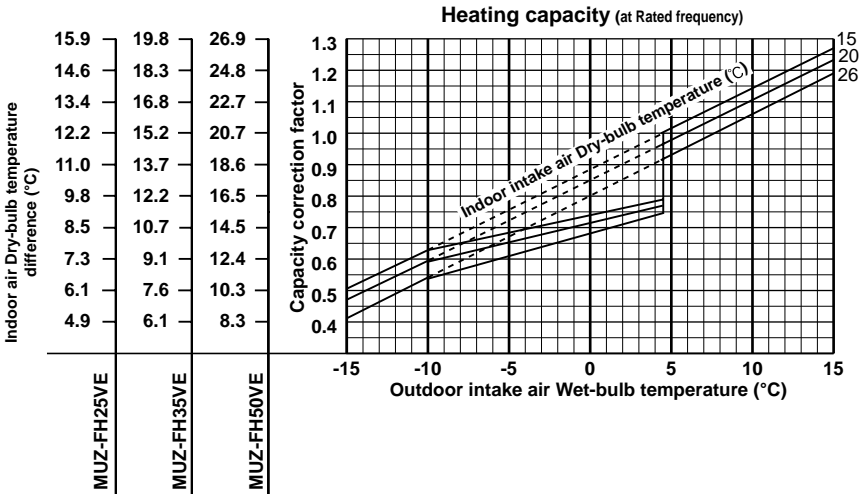
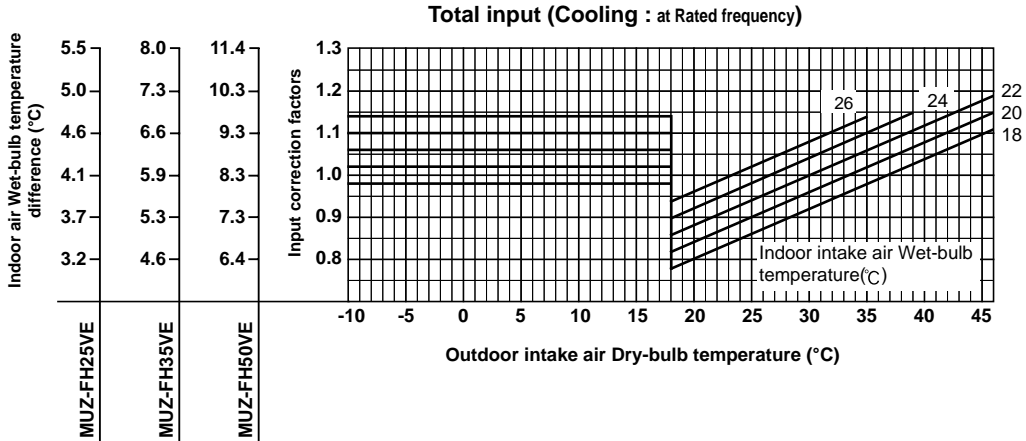
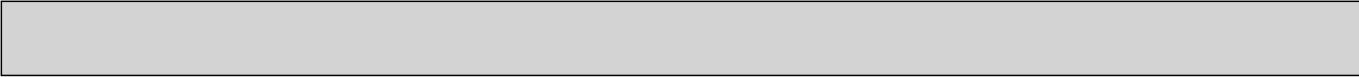
**How to measure the indoor air wet and dry bulb temperature difference**

- Attach at least 2 sets of wet and dry bulb thermometers to the indoor air intake as shown in the figure, and at least 2 sets of wet and dry bulb thermometers to the indoor air outlet. The thermometers must be attached to the position where air speed is high.
- Attach at least 2 sets of wet and dry bulb thermometers to the outdoor air intake. Cover the thermometers to prevent direct rays of the sun.
- Check that the air filter is cleaned.
- Open windows and doors of room.
- Press the EMERGENCY OPERATION switch once (twice) to start the EMERGENCY COOL (HEAT) MODE.
- When system stabilizes after more than 15 minutes, measure temperature and take an average temperature.
- 10 minutes later, measure temperature again and check that the temperature does not change.



**8-1. CAPACITY AND INPUT CURVES**

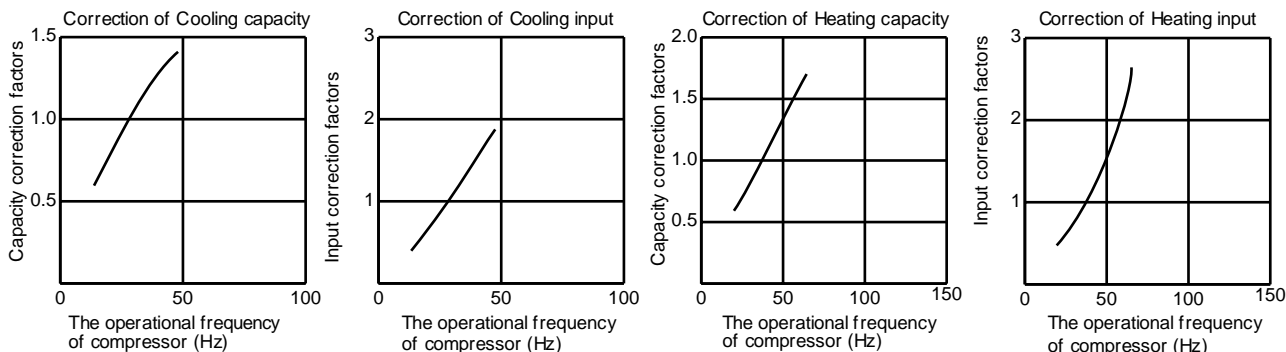




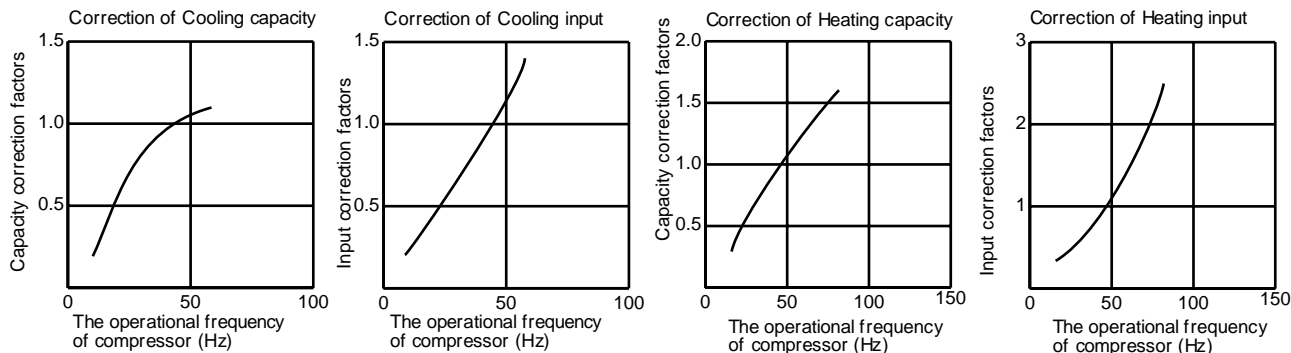
**NOTE:** The above broken lines are for the heating operation without any frost and defrost operation.

## 8-2. CAPACITY AND INPUT CORRECTION BY OPERATIONAL FREQUENCY OF COMPRESSOR

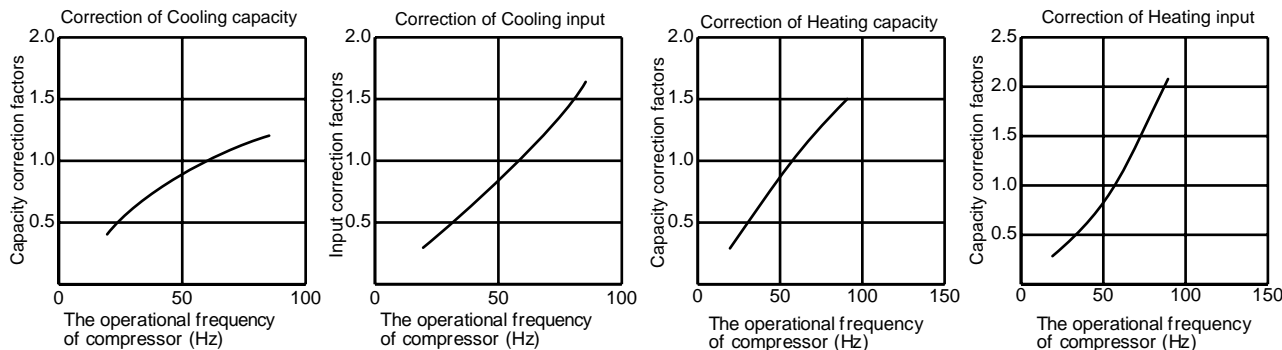
### MUZ-FH25VE



### MUZ-FH35VE



### MUZ-FH50VE



## 8-3. HOW TO OPERATE FIXED-FREQUENCY OPERATION

<Test run operation>

1. Press EMERGENCY OPERATION switch to start COOL or HEAT mode (COOL: Press once, HEAT: Press twice).
2. Test run operation starts and continues to operate for 30 minutes.
3. Compressor operates at rated frequency in COOL mode or 58 Hz in HEAT mode.
4. Indoor fan operates at High speed.
5. After 30 minutes, test run operation finishes and EMERGENCY OPERATION starts (operation frequency of compressor varies).
6. To cancel test run operation (EMERGENCY OPERATION), press EMERGENCY OPERATION switch or any button on remote controller.

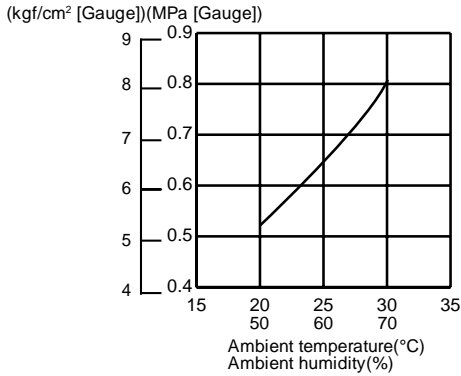
## 8-4. OUTDOOR LOW PRESSURE AND OUTDOOR UNIT CURRENT

### COOL operation

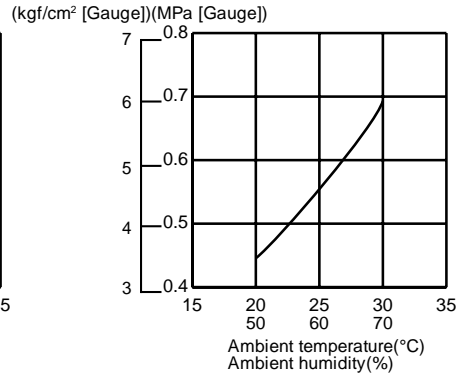
- ① Both indoor and outdoor unit are under the same temperature/humidity condition.  
 ② Operation: TEST RUN OPERATION (Refer to 8-3.)

| Dry-bulb temperature (°C) | Relative humidity (%) |
|---------------------------|-----------------------|
| 20                        | 50                    |
| 25                        | 60                    |
| 30                        | 70                    |

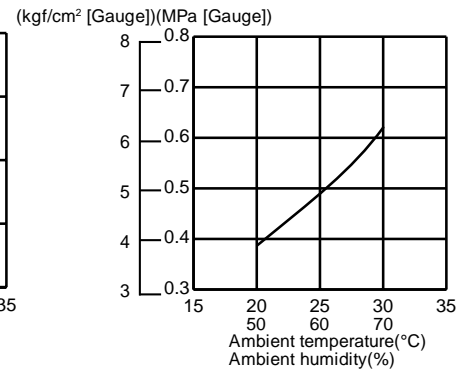
#### Outdoor low pressure MUZ-FH25VE



#### MUZ-FH35VE



#### MUZ-FH50VE

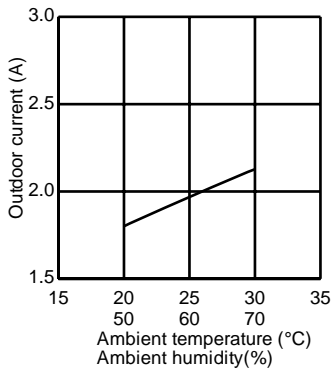


### NOTE:

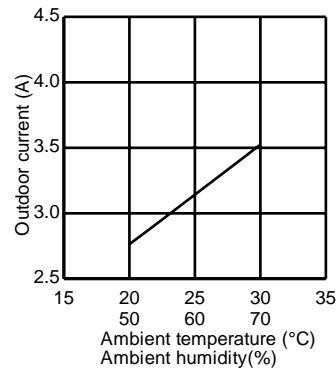
The unit of pressure has been changed to MPa on the international system of units (SI unit system)  
 The conversion factor is: **1 (MPa [Gauge]) = 10.2 (kgf/cm² [Gauge])**

#### Outdoor unit current

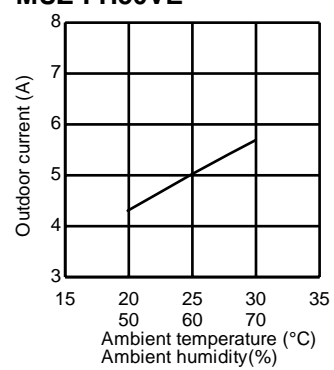
##### MUZ-FH25VE



##### MUZ-FH35VE



##### MUZ-FH50VE



### HEAT operation

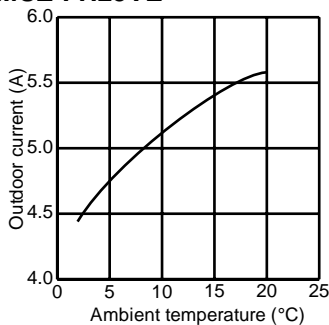
- ① Condition:

|                           | Indoor | Outdoor |   |    |      |
|---------------------------|--------|---------|---|----|------|
| Dry bulb temperature (°C) | 20.0   | 2       | 7 | 15 | 20.0 |
| Wet bulb temperature (°C) | 14.5   | 1       | 6 | 12 | 14.5 |

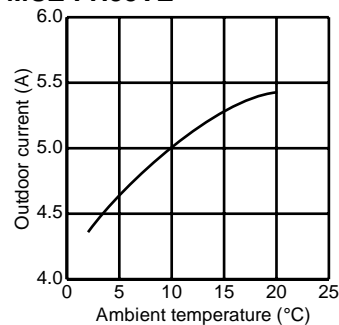
- ② Operation: Test run operation (Refer to 8-3.)

#### Outdoor unit current

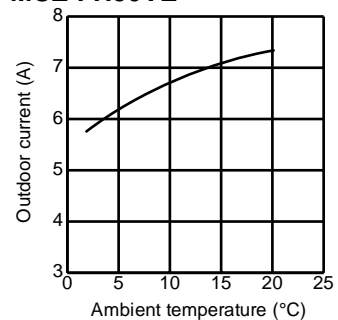
##### MUZ-FH25VE



##### MUZ-FH35VE



##### MUZ-FH50VE





**PERFORMANCE DATA COOL operation at Rated frequency**

**MUZ-FH25VE**

CAPACITY: 2.5 kW

SHF: 0.95

INPUT: 485 W

| INDOOR DB (°C) | INDOOR WB (°C) | OUTDOOR DB (°C) |      |      |       |      |      |      |       |      |      |      |       |      |      |      |       |
|----------------|----------------|-----------------|------|------|-------|------|------|------|-------|------|------|------|-------|------|------|------|-------|
|                |                | 21              |      |      |       | 25   |      |      |       | 27   |      |      |       | 30   |      |      |       |
|                |                | Q               | SHC  | SHF  | INPUT | Q    | SHC  | SHF  | INPUT | Q    | SHC  | SHF  | INPUT | Q    | SHC  | SHF  | INPUT |
| 21             | 18             | 2.94            | 2.26 | 0.77 | 388   | 2.81 | 2.17 | 0.77 | 407   | 2.70 | 2.08 | 0.77 | 427   | 2.60 | 2.00 | 0.77 | 446   |
| 21             | 20             | 3.06            | 1.99 | 0.65 | 407   | 2.94 | 1.91 | 0.65 | 432   | 2.85 | 1.85 | 0.65 | 441   | 2.75 | 1.79 | 0.65 | 461   |
| 22             | 18             | 2.94            | 2.38 | 0.81 | 388   | 2.81 | 2.28 | 0.81 | 407   | 2.70 | 2.19 | 0.81 | 427   | 2.60 | 2.11 | 0.81 | 446   |
| 22             | 20             | 3.06            | 2.11 | 0.69 | 407   | 2.94 | 2.03 | 0.69 | 432   | 2.85 | 1.97 | 0.69 | 441   | 2.75 | 1.90 | 0.69 | 461   |
| 22             | 22             | 3.19            | 1.82 | 0.57 | 422   | 3.08 | 1.75 | 0.57 | 449   | 3.00 | 1.71 | 0.57 | 461   | 2.88 | 1.64 | 0.57 | 480   |
| 23             | 18             | 2.94            | 2.50 | 0.85 | 388   | 2.81 | 2.39 | 0.85 | 407   | 2.70 | 2.30 | 0.85 | 427   | 2.60 | 2.21 | 0.85 | 446   |
| 23             | 20             | 3.06            | 2.24 | 0.73 | 407   | 2.94 | 2.14 | 0.73 | 432   | 2.85 | 2.08 | 0.73 | 441   | 2.75 | 2.01 | 0.73 | 461   |
| 23             | 22             | 3.19            | 1.94 | 0.61 | 422   | 3.08 | 1.88 | 0.61 | 449   | 3.00 | 1.83 | 0.61 | 461   | 2.88 | 1.75 | 0.61 | 480   |
| 24             | 18             | 2.94            | 2.61 | 0.89 | 388   | 2.81 | 2.50 | 0.89 | 407   | 2.70 | 2.40 | 0.89 | 427   | 2.60 | 2.31 | 0.89 | 446   |
| 24             | 20             | 3.06            | 2.36 | 0.77 | 407   | 2.94 | 2.26 | 0.77 | 432   | 2.85 | 2.19 | 0.77 | 441   | 2.75 | 2.12 | 0.77 | 461   |
| 24             | 22             | 3.19            | 2.07 | 0.65 | 422   | 3.08 | 2.00 | 0.65 | 449   | 3.00 | 1.95 | 0.65 | 461   | 2.88 | 1.87 | 0.65 | 480   |
| 24             | 24             | 3.35            | 1.78 | 0.53 | 441   | 3.23 | 1.71 | 0.53 | 466   | 3.15 | 1.67 | 0.53 | 480   | 3.05 | 1.62 | 0.53 | 504   |
| 25             | 18             | 2.94            | 2.73 | 0.93 | 388   | 2.81 | 2.62 | 0.93 | 407   | 2.70 | 2.51 | 0.93 | 427   | 2.60 | 2.42 | 0.93 | 446   |
| 25             | 20             | 3.06            | 2.48 | 0.81 | 407   | 2.94 | 2.38 | 0.81 | 432   | 2.85 | 2.31 | 0.81 | 441   | 2.75 | 2.23 | 0.81 | 461   |
| 25             | 22             | 3.19            | 2.20 | 0.69 | 422   | 3.08 | 2.12 | 0.69 | 449   | 3.00 | 2.07 | 0.69 | 461   | 2.88 | 1.98 | 0.69 | 480   |
| 25             | 24             | 3.35            | 1.91 | 0.57 | 441   | 3.23 | 1.84 | 0.57 | 466   | 3.15 | 1.80 | 0.57 | 480   | 3.05 | 1.74 | 0.57 | 504   |
| 26             | 18             | 2.94            | 2.85 | 0.97 | 388   | 2.81 | 2.73 | 0.97 | 407   | 2.70 | 2.62 | 0.97 | 427   | 2.60 | 2.52 | 0.97 | 446   |
| 26             | 20             | 3.06            | 2.60 | 0.85 | 407   | 2.94 | 2.50 | 0.85 | 432   | 2.85 | 2.42 | 0.85 | 441   | 2.75 | 2.34 | 0.85 | 461   |
| 26             | 22             | 3.19            | 2.33 | 0.73 | 422   | 3.08 | 2.24 | 0.73 | 449   | 3.00 | 2.19 | 0.73 | 461   | 2.88 | 2.10 | 0.73 | 480   |
| 26             | 24             | 3.35            | 2.04 | 0.61 | 441   | 3.23 | 1.97 | 0.61 | 466   | 3.15 | 1.92 | 0.61 | 480   | 3.05 | 1.86 | 0.61 | 504   |
| 26             | 26             | 3.45            | 1.69 | 0.49 | 466   | 3.35 | 1.64 | 0.49 | 490   | 3.30 | 1.62 | 0.49 | 504   | 3.20 | 1.57 | 0.49 | 519   |
| 27             | 18             | 2.94            | 2.94 | 1.00 | 388   | 2.81 | 2.81 | 1.00 | 407   | 2.70 | 2.70 | 1.00 | 427   | 2.60 | 2.60 | 1.00 | 446   |
| 27             | 20             | 3.06            | 2.73 | 0.89 | 407   | 2.94 | 2.61 | 0.89 | 432   | 2.85 | 2.54 | 0.89 | 441   | 2.75 | 2.45 | 0.89 | 461   |
| 27             | 22             | 3.19            | 2.45 | 0.77 | 422   | 3.08 | 2.37 | 0.77 | 449   | 3.00 | 2.31 | 0.77 | 461   | 2.88 | 2.21 | 0.77 | 480   |
| 27             | 24             | 3.35            | 2.18 | 0.65 | 441   | 3.23 | 2.10 | 0.65 | 466   | 3.15 | 2.05 | 0.65 | 480   | 3.05 | 1.98 | 0.65 | 504   |
| 27             | 26             | 3.45            | 1.83 | 0.53 | 466   | 3.35 | 1.78 | 0.53 | 490   | 3.30 | 1.75 | 0.53 | 504   | 3.20 | 1.70 | 0.53 | 519   |
| 28             | 18             | 2.94            | 2.94 | 1.00 | 388   | 2.81 | 2.81 | 1.00 | 407   | 2.70 | 2.70 | 1.00 | 427   | 2.60 | 2.60 | 1.00 | 446   |
| 28             | 20             | 3.06            | 2.85 | 0.93 | 407   | 2.94 | 2.73 | 0.93 | 432   | 2.85 | 2.65 | 0.93 | 441   | 2.75 | 2.56 | 0.93 | 461   |
| 28             | 22             | 3.19            | 2.58 | 0.81 | 422   | 3.08 | 2.49 | 0.81 | 449   | 3.00 | 2.43 | 0.81 | 461   | 2.88 | 2.33 | 0.81 | 480   |
| 28             | 24             | 3.35            | 2.31 | 0.69 | 441   | 3.23 | 2.23 | 0.69 | 466   | 3.15 | 2.17 | 0.69 | 480   | 3.05 | 2.10 | 0.69 | 504   |
| 28             | 26             | 3.45            | 1.97 | 0.57 | 466   | 3.35 | 1.91 | 0.57 | 490   | 3.30 | 1.88 | 0.57 | 504   | 3.20 | 1.82 | 0.57 | 519   |
| 29             | 18             | 2.94            | 2.94 | 1.00 | 388   | 2.81 | 2.81 | 1.00 | 407   | 2.70 | 2.70 | 1.00 | 427   | 2.60 | 2.60 | 1.00 | 446   |
| 29             | 20             | 3.06            | 2.97 | 0.97 | 407   | 2.94 | 2.85 | 0.97 | 432   | 2.85 | 2.76 | 0.97 | 441   | 2.75 | 2.67 | 0.97 | 461   |
| 29             | 22             | 3.19            | 2.71 | 0.85 | 422   | 3.08 | 2.61 | 0.85 | 449   | 3.00 | 2.55 | 0.85 | 461   | 2.88 | 2.44 | 0.85 | 480   |
| 29             | 24             | 3.35            | 2.45 | 0.73 | 441   | 3.23 | 2.35 | 0.73 | 466   | 3.15 | 2.30 | 0.73 | 480   | 3.05 | 2.23 | 0.73 | 504   |
| 29             | 26             | 3.45            | 2.10 | 0.61 | 466   | 3.35 | 2.04 | 0.61 | 490   | 3.30 | 2.01 | 0.61 | 504   | 3.20 | 1.95 | 0.61 | 519   |
| 30             | 18             | 2.94            | 2.94 | 1.00 | 388   | 2.81 | 2.81 | 1.00 | 407   | 2.70 | 2.70 | 1.00 | 427   | 2.60 | 2.60 | 1.00 | 446   |
| 30             | 20             | 3.06            | 3.06 | 1.00 | 407   | 2.94 | 2.94 | 1.00 | 432   | 2.85 | 2.85 | 1.00 | 441   | 2.75 | 2.75 | 1.00 | 461   |
| 30             | 22             | 3.19            | 2.84 | 0.89 | 422   | 3.08 | 2.74 | 0.89 | 449   | 3.00 | 2.67 | 0.89 | 461   | 2.88 | 2.56 | 0.89 | 480   |
| 30             | 24             | 3.35            | 2.58 | 0.77 | 441   | 3.23 | 2.48 | 0.77 | 466   | 3.15 | 2.43 | 0.77 | 480   | 3.05 | 2.35 | 0.77 | 504   |
| 30             | 26             | 3.45            | 2.24 | 0.65 | 466   | 3.35 | 2.18 | 0.65 | 490   | 3.30 | 2.15 | 0.65 | 504   | 3.20 | 2.08 | 0.65 | 519   |
| 31             | 18             | 2.94            | 2.94 | 1.00 | 388   | 2.81 | 2.81 | 1.00 | 407   | 2.70 | 2.70 | 1.00 | 427   | 2.60 | 2.60 | 1.00 | 446   |
| 31             | 20             | 3.06            | 3.06 | 1.00 | 407   | 2.94 | 2.94 | 1.00 | 432   | 2.85 | 2.85 | 1.00 | 441   | 2.75 | 2.75 | 1.00 | 461   |
| 31             | 22             | 3.19            | 2.96 | 0.93 | 422   | 3.08 | 2.86 | 0.93 | 449   | 3.00 | 2.79 | 0.93 | 461   | 2.88 | 2.67 | 0.93 | 480   |
| 31             | 24             | 3.35            | 2.71 | 0.81 | 441   | 3.23 | 2.61 | 0.81 | 466   | 3.15 | 2.55 | 0.81 | 480   | 3.05 | 2.47 | 0.81 | 504   |
| 31             | 26             | 3.45            | 2.38 | 0.69 | 466   | 3.35 | 2.31 | 0.69 | 490   | 3.30 | 2.28 | 0.69 | 504   | 3.20 | 2.21 | 0.69 | 519   |
| 32             | 18             | 2.94            | 2.94 | 1.00 | 388   | 2.81 | 2.81 | 1.00 | 407   | 2.70 | 2.70 | 1.00 | 427   | 2.60 | 2.60 | 1.00 | 446   |
| 32             | 20             | 3.06            | 3.06 | 1.00 | 407   | 2.94 | 2.94 | 1.00 | 432   | 2.85 | 2.85 | 1.00 | 441   | 2.75 | 2.75 | 1.00 | 461   |
| 32             | 22             | 3.19            | 3.09 | 0.97 | 422   | 3.08 | 2.98 | 0.97 | 449   | 3.00 | 2.91 | 0.97 | 461   | 2.88 | 2.79 | 0.97 | 480   |
| 32             | 24             | 3.35            | 2.85 | 0.85 | 441   | 3.23 | 2.74 | 0.85 | 466   | 3.15 | 2.68 | 0.85 | 480   | 3.05 | 2.59 | 0.85 | 504   |
| 32             | 26             | 3.45            | 2.52 | 0.73 | 466   | 3.35 | 2.45 | 0.73 | 490   | 3.30 | 2.41 | 0.73 | 504   | 3.20 | 2.34 | 0.73 | 519   |

**NOTE** Q : Total capacity (kW) SHF : Sensible heat factor DB : Dry-bulb temperature  
 SHC : Sensible heat capacity (kW) INPUT : Total power input (W) WB : Wet-bulb temperature

**PERFORMANCE DATA COOL operation at Rated frequency**

**MUZ-FH25VE**

CAPACITY: 2.5 kW

SHF: 0.95

INPUT: 485 W

| INDOOR DB (°C) | INDOOR WB (°C) | OUTDOOR DB (°C) |      |      |       |      |      |      |       |      |      |      |       |
|----------------|----------------|-----------------|------|------|-------|------|------|------|-------|------|------|------|-------|
|                |                | 35              |      |      |       | 40   |      |      |       | 46   |      |      |       |
|                |                | Q               | SHC  | SHF  | INPUT | Q    | SHC  | SHF  | INPUT | Q    | SHC  | SHF  | INPUT |
| 21             | 18             | 2.45            | 1.89 | 0.77 | 475   | 2.25 | 1.73 | 0.77 | 504   | 2.08 | 1.60 | 0.77 | 524   |
| 21             | 20             | 2.58            | 1.67 | 0.65 | 495   | 2.40 | 1.56 | 0.65 | 519   | 2.23 | 1.45 | 0.65 | 548   |
| 22             | 18             | 2.45            | 1.98 | 0.81 | 475   | 2.25 | 1.82 | 0.81 | 504   | 2.08 | 1.68 | 0.81 | 524   |
| 22             | 20             | 2.58            | 1.78 | 0.69 | 495   | 2.40 | 1.66 | 0.69 | 519   | 2.23 | 1.54 | 0.69 | 548   |
| 22             | 22             | 2.73            | 1.55 | 0.57 | 514   | 2.55 | 1.45 | 0.57 | 543   | 2.38 | 1.35 | 0.57 | 563   |
| 23             | 18             | 2.45            | 2.08 | 0.85 | 475   | 2.25 | 1.91 | 0.85 | 504   | 2.08 | 1.76 | 0.85 | 524   |
| 23             | 20             | 2.58            | 1.88 | 0.73 | 495   | 2.40 | 1.75 | 0.73 | 519   | 2.23 | 1.62 | 0.73 | 548   |
| 23             | 22             | 2.73            | 1.66 | 0.61 | 514   | 2.55 | 1.56 | 0.61 | 543   | 2.38 | 1.45 | 0.61 | 563   |
| 24             | 18             | 2.45            | 2.18 | 0.89 | 475   | 2.25 | 2.00 | 0.89 | 504   | 2.08 | 1.85 | 0.89 | 524   |
| 24             | 20             | 2.58            | 1.98 | 0.77 | 495   | 2.40 | 1.85 | 0.77 | 519   | 2.23 | 1.71 | 0.77 | 548   |
| 24             | 22             | 2.73            | 1.77 | 0.65 | 514   | 2.55 | 1.66 | 0.65 | 543   | 2.38 | 1.54 | 0.65 | 563   |
| 24             | 24             | 2.88            | 1.52 | 0.53 | 534   | 2.70 | 1.43 | 0.53 | 558   | 2.55 | 1.35 | 0.53 | 582   |
| 25             | 18             | 2.45            | 2.28 | 0.93 | 475   | 2.25 | 2.09 | 0.93 | 504   | 2.08 | 1.93 | 0.93 | 524   |
| 25             | 20             | 2.58            | 2.09 | 0.81 | 495   | 2.40 | 1.94 | 0.81 | 519   | 2.23 | 1.80 | 0.81 | 548   |
| 25             | 22             | 2.73            | 1.88 | 0.69 | 514   | 2.55 | 1.76 | 0.69 | 543   | 2.38 | 1.64 | 0.69 | 563   |
| 25             | 24             | 2.88            | 1.64 | 0.57 | 534   | 2.70 | 1.54 | 0.57 | 558   | 2.55 | 1.45 | 0.57 | 582   |
| 26             | 18             | 2.45            | 2.38 | 0.97 | 475   | 2.25 | 2.18 | 0.97 | 504   | 2.08 | 2.01 | 0.97 | 524   |
| 26             | 20             | 2.58            | 2.19 | 0.85 | 495   | 2.40 | 2.04 | 0.85 | 519   | 2.23 | 1.89 | 0.85 | 548   |
| 26             | 22             | 2.73            | 1.99 | 0.73 | 514   | 2.55 | 1.86 | 0.73 | 543   | 2.38 | 1.73 | 0.73 | 563   |
| 26             | 24             | 2.88            | 1.75 | 0.61 | 534   | 2.70 | 1.65 | 0.61 | 558   | 2.55 | 1.56 | 0.61 | 582   |
| 26             | 26             | 3.03            | 1.48 | 0.49 | 553   | 2.85 | 1.40 | 0.49 | 577   | 2.68 | 1.31 | 0.49 | 601   |
| 27             | 18             | 2.45            | 2.45 | 1.00 | 475   | 2.25 | 2.25 | 1.00 | 504   | 2.08 | 2.08 | 1.00 | 524   |
| 27             | 20             | 2.58            | 2.29 | 0.89 | 495   | 2.40 | 2.14 | 0.89 | 519   | 2.23 | 1.98 | 0.89 | 548   |
| 27             | 22             | 2.73            | 2.10 | 0.77 | 514   | 2.55 | 1.96 | 0.77 | 543   | 2.38 | 1.83 | 0.77 | 563   |
| 27             | 24             | 2.88            | 1.87 | 0.65 | 534   | 2.70 | 1.76 | 0.65 | 558   | 2.55 | 1.66 | 0.65 | 582   |
| 27             | 26             | 3.03            | 1.60 | 0.53 | 553   | 2.85 | 1.51 | 0.53 | 577   | 2.68 | 1.42 | 0.53 | 601   |
| 28             | 18             | 2.45            | 2.45 | 1.00 | 475   | 2.25 | 2.25 | 1.00 | 504   | 2.08 | 2.08 | 1.00 | 524   |
| 28             | 20             | 2.58            | 2.39 | 0.93 | 495   | 2.40 | 2.23 | 0.93 | 519   | 2.23 | 2.07 | 0.93 | 548   |
| 28             | 22             | 2.73            | 2.21 | 0.81 | 514   | 2.55 | 2.07 | 0.81 | 543   | 2.38 | 1.92 | 0.81 | 563   |
| 28             | 24             | 2.88            | 1.98 | 0.69 | 534   | 2.70 | 1.86 | 0.69 | 558   | 2.55 | 1.76 | 0.69 | 582   |
| 28             | 26             | 3.03            | 1.72 | 0.57 | 553   | 2.85 | 1.62 | 0.57 | 577   | 2.68 | 1.52 | 0.57 | 601   |
| 29             | 18             | 2.45            | 2.45 | 1.00 | 475   | 2.25 | 2.25 | 1.00 | 504   | 2.08 | 2.08 | 1.00 | 524   |
| 29             | 20             | 2.58            | 2.50 | 0.97 | 495   | 2.40 | 2.33 | 0.97 | 519   | 2.23 | 2.16 | 0.97 | 548   |
| 29             | 22             | 2.73            | 2.32 | 0.85 | 514   | 2.55 | 2.17 | 0.85 | 543   | 2.38 | 2.02 | 0.85 | 563   |
| 29             | 24             | 2.88            | 2.10 | 0.73 | 534   | 2.70 | 1.97 | 0.73 | 558   | 2.55 | 1.86 | 0.73 | 582   |
| 29             | 26             | 3.03            | 1.85 | 0.61 | 553   | 2.85 | 1.74 | 0.61 | 577   | 2.68 | 1.63 | 0.61 | 601   |
| 30             | 18             | 2.45            | 2.45 | 1.00 | 475   | 2.25 | 2.25 | 1.00 | 504   | 2.08 | 2.08 | 1.00 | 524   |
| 30             | 20             | 2.58            | 2.58 | 1.00 | 495   | 2.40 | 2.40 | 1.00 | 519   | 2.23 | 2.23 | 1.00 | 548   |
| 30             | 22             | 2.73            | 2.43 | 0.89 | 514   | 2.55 | 2.27 | 0.89 | 543   | 2.38 | 2.11 | 0.89 | 563   |
| 30             | 24             | 2.88            | 2.21 | 0.77 | 534   | 2.70 | 2.08 | 0.77 | 558   | 2.55 | 1.96 | 0.77 | 582   |
| 30             | 26             | 3.03            | 1.97 | 0.65 | 553   | 2.85 | 1.85 | 0.65 | 577   | 2.68 | 1.74 | 0.65 | 601   |
| 31             | 18             | 2.45            | 2.45 | 1.00 | 475   | 2.25 | 2.25 | 1.00 | 504   | 2.08 | 2.08 | 1.00 | 524   |
| 31             | 20             | 2.58            | 2.58 | 1.00 | 495   | 2.40 | 2.40 | 1.00 | 519   | 2.23 | 2.23 | 1.00 | 548   |
| 31             | 22             | 2.73            | 2.53 | 0.93 | 514   | 2.55 | 2.37 | 0.93 | 543   | 2.38 | 2.21 | 0.93 | 563   |
| 31             | 24             | 2.88            | 2.33 | 0.81 | 534   | 2.70 | 2.19 | 0.81 | 558   | 2.55 | 2.07 | 0.81 | 582   |
| 31             | 26             | 3.03            | 2.09 | 0.69 | 553   | 2.85 | 1.97 | 0.69 | 577   | 2.68 | 1.85 | 0.69 | 601   |
| 32             | 18             | 2.45            | 2.45 | 1.00 | 475   | 2.25 | 2.25 | 1.00 | 504   | 2.08 | 2.08 | 1.00 | 524   |
| 32             | 20             | 2.58            | 2.58 | 1.00 | 495   | 2.40 | 2.40 | 1.00 | 519   | 2.23 | 2.23 | 1.00 | 548   |
| 32             | 22             | 2.73            | 2.64 | 0.97 | 514   | 2.55 | 2.47 | 0.97 | 543   | 2.38 | 2.30 | 0.97 | 563   |
| 32             | 24             | 2.88            | 2.44 | 0.85 | 534   | 2.70 | 2.30 | 0.85 | 558   | 2.55 | 2.17 | 0.85 | 582   |
| 32             | 26             | 3.03            | 2.21 | 0.73 | 553   | 2.85 | 2.08 | 0.73 | 577   | 2.68 | 1.95 | 0.73 | 601   |

**NOTE** Q : Total capacity (kW) SHF : Sensible heat factor DB : Dry-bulb temperature  
 SHC : Sensible heat capacity (kW) INPUT : Total power input (W) WB : Wet-bulb temperature

**PERFORMANCE DATA COOL operation at Rated frequency**  
**MUZ-FH35VE**

CAPACITY: 3.5 kW SHF: 0.84 INPUT: 820 W

| INDOOR DB (°C) | INDOOR WB (°C) | OUTDOOR DB (°C) |      |      |       |      |      |      |       |      |      |      |       |      |      |      |       |
|----------------|----------------|-----------------|------|------|-------|------|------|------|-------|------|------|------|-------|------|------|------|-------|
|                |                | 21              |      |      |       | 25   |      |      |       | 27   |      |      |       | 30   |      |      |       |
|                |                | Q               | SHC  | SHF  | INPUT | Q    | SHC  | SHF  | INPUT | Q    | SHC  | SHF  | INPUT | Q    | SHC  | SHF  | INPUT |
| 21             | 18             | 4.11            | 2.71 | 0.66 | 656   | 3.94 | 2.60 | 0.66 | 689   | 3.78 | 2.49 | 0.66 | 722   | 3.64 | 2.40 | 0.66 | 754   |
| 21             | 20             | 4.29            | 2.32 | 0.54 | 689   | 4.11 | 2.22 | 0.54 | 730   | 3.99 | 2.15 | 0.54 | 746   | 3.85 | 2.08 | 0.54 | 779   |
| 22             | 18             | 4.11            | 2.88 | 0.70 | 656   | 3.94 | 2.76 | 0.70 | 689   | 3.78 | 2.65 | 0.70 | 722   | 3.64 | 2.55 | 0.70 | 754   |
| 22             | 20             | 4.29            | 2.49 | 0.58 | 689   | 4.11 | 2.39 | 0.58 | 730   | 3.99 | 2.31 | 0.58 | 746   | 3.85 | 2.23 | 0.58 | 779   |
| 22             | 22             | 4.46            | 2.05 | 0.46 | 713   | 4.31 | 1.98 | 0.46 | 759   | 4.20 | 1.93 | 0.46 | 779   | 4.03 | 1.85 | 0.46 | 812   |
| 23             | 18             | 4.11            | 3.04 | 0.74 | 656   | 3.94 | 2.91 | 0.74 | 689   | 3.78 | 2.80 | 0.74 | 722   | 3.64 | 2.69 | 0.74 | 754   |
| 23             | 20             | 4.29            | 2.66 | 0.62 | 689   | 4.11 | 2.55 | 0.62 | 730   | 3.99 | 2.47 | 0.62 | 746   | 3.85 | 2.39 | 0.62 | 779   |
| 23             | 22             | 4.46            | 2.23 | 0.50 | 713   | 4.31 | 2.15 | 0.50 | 759   | 4.20 | 2.10 | 0.50 | 779   | 4.03 | 2.01 | 0.50 | 812   |
| 24             | 18             | 4.11            | 3.21 | 0.78 | 656   | 3.94 | 3.07 | 0.78 | 689   | 3.78 | 2.95 | 0.78 | 722   | 3.64 | 2.84 | 0.78 | 754   |
| 24             | 20             | 4.29            | 2.83 | 0.66 | 689   | 4.11 | 2.71 | 0.66 | 730   | 3.99 | 2.63 | 0.66 | 746   | 3.85 | 2.54 | 0.66 | 779   |
| 24             | 22             | 4.46            | 2.41 | 0.54 | 713   | 4.31 | 2.32 | 0.54 | 759   | 4.20 | 2.27 | 0.54 | 779   | 4.03 | 2.17 | 0.54 | 812   |
| 24             | 24             | 4.69            | 1.97 | 0.42 | 746   | 4.52 | 1.90 | 0.42 | 787   | 4.41 | 1.85 | 0.42 | 812   | 4.27 | 1.79 | 0.42 | 853   |
| 25             | 18             | 4.11            | 3.37 | 0.82 | 656   | 3.94 | 3.23 | 0.82 | 689   | 3.78 | 3.10 | 0.82 | 722   | 3.64 | 2.98 | 0.82 | 754   |
| 25             | 20             | 4.29            | 3.00 | 0.70 | 689   | 4.11 | 2.88 | 0.70 | 730   | 3.99 | 2.79 | 0.70 | 746   | 3.85 | 2.70 | 0.70 | 779   |
| 25             | 22             | 4.46            | 2.59 | 0.58 | 713   | 4.31 | 2.50 | 0.58 | 759   | 4.20 | 2.44 | 0.58 | 779   | 4.03 | 2.33 | 0.58 | 812   |
| 25             | 24             | 4.69            | 2.16 | 0.46 | 746   | 4.52 | 2.08 | 0.46 | 787   | 4.41 | 2.03 | 0.46 | 812   | 4.27 | 1.96 | 0.46 | 853   |
| 26             | 18             | 4.11            | 3.54 | 0.86 | 656   | 3.94 | 3.39 | 0.86 | 689   | 3.78 | 3.25 | 0.86 | 722   | 3.64 | 3.13 | 0.86 | 754   |
| 26             | 20             | 4.29            | 3.17 | 0.74 | 689   | 4.11 | 3.04 | 0.74 | 730   | 3.99 | 2.95 | 0.74 | 746   | 3.85 | 2.85 | 0.74 | 779   |
| 26             | 22             | 4.46            | 2.77 | 0.62 | 713   | 4.31 | 2.67 | 0.62 | 759   | 4.20 | 2.60 | 0.62 | 779   | 4.03 | 2.50 | 0.62 | 812   |
| 26             | 24             | 4.69            | 2.35 | 0.50 | 746   | 4.52 | 2.26 | 0.50 | 787   | 4.41 | 2.21 | 0.50 | 812   | 4.27 | 2.14 | 0.50 | 853   |
| 26             | 26             | 4.83            | 1.84 | 0.38 | 787   | 4.69 | 1.78 | 0.38 | 828   | 4.62 | 1.76 | 0.38 | 853   | 4.48 | 1.70 | 0.38 | 877   |
| 27             | 18             | 4.11            | 3.70 | 0.90 | 656   | 3.94 | 3.54 | 0.90 | 689   | 3.78 | 3.40 | 0.90 | 722   | 3.64 | 3.28 | 0.90 | 754   |
| 27             | 20             | 4.29            | 3.34 | 0.78 | 689   | 4.11 | 3.21 | 0.78 | 730   | 3.99 | 3.11 | 0.78 | 746   | 3.85 | 3.00 | 0.78 | 779   |
| 27             | 22             | 4.46            | 2.95 | 0.66 | 713   | 4.31 | 2.84 | 0.66 | 759   | 4.20 | 2.77 | 0.66 | 779   | 4.03 | 2.66 | 0.66 | 812   |
| 27             | 24             | 4.69            | 2.53 | 0.54 | 746   | 4.52 | 2.44 | 0.54 | 787   | 4.41 | 2.38 | 0.54 | 812   | 4.27 | 2.31 | 0.54 | 853   |
| 27             | 26             | 4.83            | 2.03 | 0.42 | 787   | 4.69 | 1.97 | 0.42 | 828   | 4.62 | 1.94 | 0.42 | 853   | 4.48 | 1.88 | 0.42 | 877   |
| 28             | 18             | 4.11            | 3.87 | 0.94 | 656   | 3.94 | 3.70 | 0.94 | 689   | 3.78 | 3.55 | 0.94 | 722   | 3.64 | 3.42 | 0.94 | 754   |
| 28             | 20             | 4.29            | 3.52 | 0.82 | 689   | 4.11 | 3.37 | 0.82 | 730   | 3.99 | 3.27 | 0.82 | 746   | 3.85 | 3.16 | 0.82 | 779   |
| 28             | 22             | 4.46            | 3.12 | 0.70 | 713   | 4.31 | 3.01 | 0.70 | 759   | 4.20 | 2.94 | 0.70 | 779   | 4.03 | 2.82 | 0.70 | 812   |
| 28             | 24             | 4.69            | 2.72 | 0.58 | 746   | 4.52 | 2.62 | 0.58 | 787   | 4.41 | 2.56 | 0.58 | 812   | 4.27 | 2.48 | 0.58 | 853   |
| 28             | 26             | 4.83            | 2.22 | 0.46 | 787   | 4.69 | 2.16 | 0.46 | 828   | 4.62 | 2.13 | 0.46 | 853   | 4.48 | 2.06 | 0.46 | 877   |
| 29             | 18             | 4.11            | 4.03 | 0.98 | 656   | 3.94 | 3.86 | 0.98 | 689   | 3.78 | 3.70 | 0.98 | 722   | 3.64 | 3.57 | 0.98 | 754   |
| 29             | 20             | 4.29            | 3.69 | 0.86 | 689   | 4.11 | 3.54 | 0.86 | 730   | 3.99 | 3.43 | 0.86 | 746   | 3.85 | 3.31 | 0.86 | 779   |
| 29             | 22             | 4.46            | 3.30 | 0.74 | 713   | 4.31 | 3.19 | 0.74 | 759   | 4.20 | 3.11 | 0.74 | 779   | 4.03 | 2.98 | 0.74 | 812   |
| 29             | 24             | 4.69            | 2.91 | 0.62 | 746   | 4.52 | 2.80 | 0.62 | 787   | 4.41 | 2.73 | 0.62 | 812   | 4.27 | 2.65 | 0.62 | 853   |
| 29             | 26             | 4.83            | 2.42 | 0.50 | 787   | 4.69 | 2.35 | 0.50 | 828   | 4.62 | 2.31 | 0.50 | 853   | 4.48 | 2.24 | 0.50 | 877   |
| 30             | 18             | 4.11            | 4.11 | 1.00 | 656   | 3.94 | 3.94 | 1.00 | 689   | 3.78 | 3.78 | 1.00 | 722   | 3.64 | 3.64 | 1.00 | 754   |
| 30             | 20             | 4.29            | 3.86 | 0.90 | 689   | 4.11 | 3.70 | 0.90 | 730   | 3.99 | 3.59 | 0.90 | 746   | 3.85 | 3.47 | 0.90 | 779   |
| 30             | 22             | 4.46            | 3.48 | 0.78 | 713   | 4.31 | 3.36 | 0.78 | 759   | 4.20 | 3.28 | 0.78 | 779   | 4.03 | 3.14 | 0.78 | 812   |
| 30             | 24             | 4.69            | 3.10 | 0.66 | 746   | 4.52 | 2.98 | 0.66 | 787   | 4.41 | 2.91 | 0.66 | 812   | 4.27 | 2.82 | 0.66 | 853   |
| 30             | 26             | 4.83            | 2.61 | 0.54 | 787   | 4.69 | 2.53 | 0.54 | 828   | 4.62 | 2.49 | 0.54 | 853   | 4.48 | 2.42 | 0.54 | 877   |
| 31             | 18             | 4.11            | 4.11 | 1.00 | 656   | 3.94 | 3.94 | 1.00 | 689   | 3.78 | 3.78 | 1.00 | 722   | 3.64 | 3.64 | 1.00 | 754   |
| 31             | 20             | 4.29            | 4.03 | 0.94 | 689   | 4.11 | 3.87 | 0.94 | 730   | 3.99 | 3.75 | 0.94 | 746   | 3.85 | 3.62 | 0.94 | 779   |
| 31             | 22             | 4.46            | 3.66 | 0.82 | 713   | 4.31 | 3.53 | 0.82 | 759   | 4.20 | 3.44 | 0.82 | 779   | 4.03 | 3.30 | 0.82 | 812   |
| 31             | 24             | 4.69            | 3.28 | 0.70 | 746   | 4.52 | 3.16 | 0.70 | 787   | 4.41 | 3.09 | 0.70 | 812   | 4.27 | 2.99 | 0.70 | 853   |
| 31             | 26             | 4.83            | 2.80 | 0.58 | 787   | 4.69 | 2.72 | 0.58 | 828   | 4.62 | 2.68 | 0.58 | 853   | 4.48 | 2.60 | 0.58 | 877   |
| 32             | 18             | 4.11            | 4.11 | 1.00 | 656   | 3.94 | 3.94 | 1.00 | 689   | 3.78 | 3.78 | 1.00 | 722   | 3.64 | 3.64 | 1.00 | 754   |
| 32             | 20             | 4.29            | 4.20 | 0.98 | 689   | 4.11 | 4.03 | 0.98 | 730   | 3.99 | 3.91 | 0.98 | 746   | 3.85 | 3.77 | 0.98 | 779   |
| 32             | 22             | 4.46            | 3.84 | 0.86 | 713   | 4.31 | 3.70 | 0.86 | 759   | 4.20 | 3.61 | 0.86 | 779   | 4.03 | 3.46 | 0.86 | 812   |
| 32             | 24             | 4.69            | 3.47 | 0.74 | 746   | 4.52 | 3.34 | 0.74 | 787   | 4.41 | 3.26 | 0.74 | 812   | 4.27 | 3.16 | 0.74 | 853   |
| 32             | 26             | 4.83            | 2.99 | 0.62 | 787   | 4.69 | 2.91 | 0.62 | 828   | 4.62 | 2.86 | 0.62 | 853   | 4.48 | 2.78 | 0.62 | 877   |

**NOTE** Q : Total capacity (kW) SHF : Sensible heat factor DB : Dry-bulb temperature  
 SHC : Sensible heat capacity (kW) INPUT : Total power input (W) WB : Wet-bulb temperature

**PERFORMANCE DATA COOL operation at Rated frequency**

**MUZ-FH35VE**

CAPACITY: 3.5 kW

SHF: 0.84

INPUT: 820 W

| INDOOR DB (°C) | INDOOR WB (°C) | OUTDOOR DB (°C) |      |      |       |      |      |      |       |      |      |      |       |
|----------------|----------------|-----------------|------|------|-------|------|------|------|-------|------|------|------|-------|
|                |                | 35              |      |      |       | 40   |      |      |       | 46   |      |      |       |
|                |                | Q               | SHC  | SHF  | INPUT | Q    | SHC  | SHF  | INPUT | Q    | SHC  | SHF  | INPUT |
| 21             | 18             | 3.43            | 2.26 | 0.66 | 804   | 3.15 | 2.08 | 0.66 | 853   | 2.91 | 1.92 | 0.66 | 886   |
| 21             | 20             | 3.61            | 1.95 | 0.54 | 836   | 3.36 | 1.81 | 0.54 | 877   | 3.12 | 1.68 | 0.54 | 927   |
| 22             | 18             | 3.43            | 2.40 | 0.70 | 804   | 3.15 | 2.21 | 0.70 | 853   | 2.91 | 2.03 | 0.70 | 886   |
| 22             | 20             | 3.61            | 2.09 | 0.58 | 836   | 3.36 | 1.95 | 0.58 | 877   | 3.12 | 1.81 | 0.58 | 927   |
| 22             | 22             | 3.82            | 1.75 | 0.46 | 869   | 3.57 | 1.64 | 0.46 | 918   | 3.33 | 1.53 | 0.46 | 951   |
| 23             | 18             | 3.43            | 2.54 | 0.74 | 804   | 3.15 | 2.33 | 0.74 | 853   | 2.91 | 2.15 | 0.74 | 886   |
| 23             | 20             | 3.61            | 2.24 | 0.62 | 836   | 3.36 | 2.08 | 0.62 | 877   | 3.12 | 1.93 | 0.62 | 927   |
| 23             | 22             | 3.82            | 1.91 | 0.50 | 869   | 3.57 | 1.79 | 0.50 | 918   | 3.33 | 1.66 | 0.50 | 951   |
| 24             | 18             | 3.43            | 2.68 | 0.78 | 804   | 3.15 | 2.46 | 0.78 | 853   | 2.91 | 2.27 | 0.78 | 886   |
| 24             | 20             | 3.61            | 2.38 | 0.66 | 836   | 3.36 | 2.22 | 0.66 | 877   | 3.12 | 2.06 | 0.66 | 927   |
| 24             | 22             | 3.82            | 2.06 | 0.54 | 869   | 3.57 | 1.93 | 0.54 | 918   | 3.33 | 1.80 | 0.54 | 951   |
| 24             | 24             | 4.03            | 1.69 | 0.42 | 902   | 3.78 | 1.59 | 0.42 | 943   | 3.57 | 1.50 | 0.42 | 984   |
| 25             | 18             | 3.43            | 2.81 | 0.82 | 804   | 3.15 | 2.58 | 0.82 | 853   | 2.91 | 2.38 | 0.82 | 886   |
| 25             | 20             | 3.61            | 2.52 | 0.70 | 836   | 3.36 | 2.35 | 0.70 | 877   | 3.12 | 2.18 | 0.70 | 927   |
| 25             | 22             | 3.82            | 2.21 | 0.58 | 869   | 3.57 | 2.07 | 0.58 | 918   | 3.33 | 1.93 | 0.58 | 951   |
| 25             | 24             | 4.03            | 1.85 | 0.46 | 902   | 3.78 | 1.74 | 0.46 | 943   | 3.57 | 1.64 | 0.46 | 984   |
| 26             | 18             | 3.43            | 2.95 | 0.86 | 804   | 3.15 | 2.71 | 0.86 | 853   | 2.91 | 2.50 | 0.86 | 886   |
| 26             | 20             | 3.61            | 2.67 | 0.74 | 836   | 3.36 | 2.49 | 0.74 | 877   | 3.12 | 2.31 | 0.74 | 927   |
| 26             | 22             | 3.82            | 2.37 | 0.62 | 869   | 3.57 | 2.21 | 0.62 | 918   | 3.33 | 2.06 | 0.62 | 951   |
| 26             | 24             | 4.03            | 2.01 | 0.50 | 902   | 3.78 | 1.89 | 0.50 | 943   | 3.57 | 1.79 | 0.50 | 984   |
| 26             | 26             | 4.24            | 1.61 | 0.38 | 935   | 3.99 | 1.52 | 0.38 | 976   | 3.75 | 1.42 | 0.38 | 1017  |
| 27             | 18             | 3.43            | 3.09 | 0.90 | 804   | 3.15 | 2.84 | 0.90 | 853   | 2.91 | 2.61 | 0.90 | 886   |
| 27             | 20             | 3.61            | 2.81 | 0.78 | 836   | 3.36 | 2.62 | 0.78 | 877   | 3.12 | 2.43 | 0.78 | 927   |
| 27             | 22             | 3.82            | 2.52 | 0.66 | 869   | 3.57 | 2.36 | 0.66 | 918   | 3.33 | 2.19 | 0.66 | 951   |
| 27             | 24             | 4.03            | 2.17 | 0.54 | 902   | 3.78 | 2.04 | 0.54 | 943   | 3.57 | 1.93 | 0.54 | 984   |
| 27             | 26             | 4.24            | 1.78 | 0.42 | 935   | 3.99 | 1.68 | 0.42 | 976   | 3.75 | 1.57 | 0.42 | 1017  |
| 28             | 18             | 3.43            | 3.22 | 0.94 | 804   | 3.15 | 2.96 | 0.94 | 853   | 2.91 | 2.73 | 0.94 | 886   |
| 28             | 20             | 3.61            | 2.96 | 0.82 | 836   | 3.36 | 2.76 | 0.82 | 877   | 3.12 | 2.55 | 0.82 | 927   |
| 28             | 22             | 3.82            | 2.67 | 0.70 | 869   | 3.57 | 2.50 | 0.70 | 918   | 3.33 | 2.33 | 0.70 | 951   |
| 28             | 24             | 4.03            | 2.33 | 0.58 | 902   | 3.78 | 2.19 | 0.58 | 943   | 3.57 | 2.07 | 0.58 | 984   |
| 28             | 26             | 4.24            | 1.95 | 0.46 | 935   | 3.99 | 1.84 | 0.46 | 976   | 3.75 | 1.72 | 0.46 | 1017  |
| 29             | 18             | 3.43            | 3.36 | 0.98 | 804   | 3.15 | 3.09 | 0.98 | 853   | 2.91 | 2.85 | 0.98 | 886   |
| 29             | 20             | 3.61            | 3.10 | 0.86 | 836   | 3.36 | 2.89 | 0.86 | 877   | 3.12 | 2.68 | 0.86 | 927   |
| 29             | 22             | 3.82            | 2.82 | 0.74 | 869   | 3.57 | 2.64 | 0.74 | 918   | 3.33 | 2.46 | 0.74 | 951   |
| 29             | 24             | 4.03            | 2.50 | 0.62 | 902   | 3.78 | 2.34 | 0.62 | 943   | 3.57 | 2.21 | 0.62 | 984   |
| 29             | 26             | 4.24            | 2.12 | 0.50 | 935   | 3.99 | 2.00 | 0.50 | 976   | 3.75 | 1.87 | 0.50 | 1017  |
| 30             | 18             | 3.43            | 3.43 | 1.00 | 804   | 3.15 | 3.15 | 1.00 | 853   | 2.91 | 2.91 | 1.00 | 886   |
| 30             | 20             | 3.61            | 3.24 | 0.90 | 836   | 3.36 | 3.02 | 0.90 | 877   | 3.12 | 2.80 | 0.90 | 927   |
| 30             | 22             | 3.82            | 2.98 | 0.78 | 869   | 3.57 | 2.78 | 0.78 | 918   | 3.33 | 2.59 | 0.78 | 951   |
| 30             | 24             | 4.03            | 2.66 | 0.66 | 902   | 3.78 | 2.49 | 0.66 | 943   | 3.57 | 2.36 | 0.66 | 984   |
| 30             | 26             | 4.24            | 2.29 | 0.54 | 935   | 3.99 | 2.15 | 0.54 | 976   | 3.75 | 2.02 | 0.54 | 1017  |
| 31             | 18             | 3.43            | 3.43 | 1.00 | 804   | 3.15 | 3.15 | 1.00 | 853   | 2.91 | 2.91 | 1.00 | 886   |
| 31             | 20             | 3.61            | 3.39 | 0.94 | 836   | 3.36 | 3.16 | 0.94 | 877   | 3.12 | 2.93 | 0.94 | 927   |
| 31             | 22             | 3.82            | 3.13 | 0.82 | 869   | 3.57 | 2.93 | 0.82 | 918   | 3.33 | 2.73 | 0.82 | 951   |
| 31             | 24             | 4.03            | 2.82 | 0.70 | 902   | 3.78 | 2.65 | 0.70 | 943   | 3.57 | 2.50 | 0.70 | 984   |
| 31             | 26             | 4.24            | 2.46 | 0.58 | 935   | 3.99 | 2.31 | 0.58 | 976   | 3.75 | 2.17 | 0.58 | 1017  |
| 32             | 18             | 3.43            | 3.43 | 1.00 | 804   | 3.15 | 3.15 | 1.00 | 853   | 2.91 | 2.91 | 1.00 | 886   |
| 32             | 20             | 3.61            | 3.53 | 0.98 | 836   | 3.36 | 3.29 | 0.98 | 877   | 3.12 | 3.05 | 0.98 | 927   |
| 32             | 22             | 3.82            | 3.28 | 0.86 | 869   | 3.57 | 3.07 | 0.86 | 918   | 3.33 | 2.86 | 0.86 | 951   |
| 32             | 24             | 4.03            | 2.98 | 0.74 | 902   | 3.78 | 2.80 | 0.74 | 943   | 3.57 | 2.64 | 0.74 | 984   |
| 32             | 26             | 4.24            | 2.63 | 0.62 | 935   | 3.99 | 2.47 | 0.62 | 976   | 3.75 | 2.32 | 0.62 | 1017  |

**NOTE** Q : Total capacity (kW) SHF : Sensible heat factor DB : Dry-bulb temperature  
 SHC : Sensible heat capacity (kW) INPUT : Total power input (W) WB : Wet-bulb temperature

**PERFORMANCE DATA COOL operation at Rated frequency**

**MUZ-FH50VE**

CAPACITY: 5.0 kW

SHF: 0.73

INPUT: 1380 W

| INDOOR DB (°C) | INDOOR WB (°C) | OUTDOOR DB (°C) |      |      |       |      |      |      |       |      |      |      |       |      |      |      |       |
|----------------|----------------|-----------------|------|------|-------|------|------|------|-------|------|------|------|-------|------|------|------|-------|
|                |                | 21              |      |      |       | 25   |      |      |       | 27   |      |      |       | 30   |      |      |       |
|                |                | Q               | SHC  | SHF  | INPUT | Q    | SHC  | SHF  | INPUT | Q    | SHC  | SHF  | INPUT | Q    | SHC  | SHF  | INPUT |
| 21             | 18             | 5.88            | 3.23 | 0.55 | 1104  | 5.63 | 3.09 | 0.55 | 1159  | 5.40 | 2.97 | 0.55 | 1214  | 5.20 | 2.86 | 0.55 | 1270  |
| 21             | 20             | 6.13            | 2.63 | 0.43 | 1159  | 5.88 | 2.53 | 0.43 | 1228  | 5.70 | 2.45 | 0.43 | 1256  | 5.50 | 2.37 | 0.43 | 1311  |
| 22             | 18             | 5.88            | 3.47 | 0.59 | 1104  | 5.63 | 3.32 | 0.59 | 1159  | 5.40 | 3.19 | 0.59 | 1214  | 5.20 | 3.07 | 0.59 | 1270  |
| 22             | 20             | 6.13            | 2.88 | 0.47 | 1159  | 5.88 | 2.76 | 0.47 | 1228  | 5.70 | 2.68 | 0.47 | 1256  | 5.50 | 2.59 | 0.47 | 1311  |
| 22             | 22             | 6.38            | 2.23 | 0.35 | 1201  | 6.15 | 2.15 | 0.35 | 1277  | 6.00 | 2.10 | 0.35 | 1311  | 5.75 | 2.01 | 0.35 | 1366  |
| 23             | 18             | 5.88            | 3.70 | 0.63 | 1104  | 5.63 | 3.54 | 0.63 | 1159  | 5.40 | 3.40 | 0.63 | 1214  | 5.20 | 3.28 | 0.63 | 1270  |
| 23             | 20             | 6.13            | 3.12 | 0.51 | 1159  | 5.88 | 3.00 | 0.51 | 1228  | 5.70 | 2.91 | 0.51 | 1256  | 5.50 | 2.81 | 0.51 | 1311  |
| 23             | 22             | 6.38            | 2.49 | 0.39 | 1201  | 6.15 | 2.40 | 0.39 | 1277  | 6.00 | 2.34 | 0.39 | 1311  | 5.75 | 2.24 | 0.39 | 1366  |
| 24             | 18             | 5.88            | 3.94 | 0.67 | 1104  | 5.63 | 3.77 | 0.67 | 1159  | 5.40 | 3.62 | 0.67 | 1214  | 5.20 | 3.48 | 0.67 | 1270  |
| 24             | 20             | 6.13            | 3.37 | 0.55 | 1159  | 5.88 | 3.23 | 0.55 | 1228  | 5.70 | 3.14 | 0.55 | 1256  | 5.50 | 3.03 | 0.55 | 1311  |
| 24             | 22             | 6.38            | 2.74 | 0.43 | 1201  | 6.15 | 2.64 | 0.43 | 1277  | 6.00 | 2.58 | 0.43 | 1311  | 5.75 | 2.47 | 0.43 | 1366  |
| 24             | 24             | 6.70            | 2.08 | 0.31 | 1256  | 6.45 | 2.00 | 0.31 | 1325  | 6.30 | 1.95 | 0.31 | 1366  | 6.10 | 1.89 | 0.31 | 1435  |
| 25             | 18             | 5.88            | 4.17 | 0.71 | 1104  | 5.63 | 3.99 | 0.71 | 1159  | 5.40 | 3.83 | 0.71 | 1214  | 5.20 | 3.69 | 0.71 | 1270  |
| 25             | 20             | 6.13            | 3.61 | 0.59 | 1159  | 5.88 | 3.47 | 0.59 | 1228  | 5.70 | 3.36 | 0.59 | 1256  | 5.50 | 3.25 | 0.59 | 1311  |
| 25             | 22             | 6.38            | 3.00 | 0.47 | 1201  | 6.15 | 2.89 | 0.47 | 1277  | 6.00 | 2.82 | 0.47 | 1311  | 5.75 | 2.70 | 0.47 | 1366  |
| 25             | 24             | 6.70            | 2.35 | 0.35 | 1256  | 6.45 | 2.26 | 0.35 | 1325  | 6.30 | 2.21 | 0.35 | 1366  | 6.10 | 2.14 | 0.35 | 1435  |
| 26             | 18             | 5.88            | 4.41 | 0.75 | 1104  | 5.63 | 4.22 | 0.75 | 1159  | 5.40 | 4.05 | 0.75 | 1214  | 5.20 | 3.90 | 0.75 | 1270  |
| 26             | 20             | 6.13            | 3.86 | 0.63 | 1159  | 5.88 | 3.70 | 0.63 | 1228  | 5.70 | 3.59 | 0.63 | 1256  | 5.50 | 3.47 | 0.63 | 1311  |
| 26             | 22             | 6.38            | 3.25 | 0.51 | 1201  | 6.15 | 3.14 | 0.51 | 1277  | 6.00 | 3.06 | 0.51 | 1311  | 5.75 | 2.93 | 0.51 | 1366  |
| 26             | 24             | 6.70            | 2.61 | 0.39 | 1256  | 6.45 | 2.52 | 0.39 | 1325  | 6.30 | 2.46 | 0.39 | 1366  | 6.10 | 2.38 | 0.39 | 1435  |
| 26             | 26             | 6.90            | 1.86 | 0.27 | 1325  | 6.70 | 1.81 | 0.27 | 1394  | 6.60 | 1.78 | 0.27 | 1435  | 6.40 | 1.73 | 0.27 | 1477  |
| 27             | 18             | 5.88            | 4.64 | 0.79 | 1104  | 5.63 | 4.44 | 0.79 | 1159  | 5.40 | 4.27 | 0.79 | 1214  | 5.20 | 4.11 | 0.79 | 1270  |
| 27             | 20             | 6.13            | 4.10 | 0.67 | 1159  | 5.88 | 3.94 | 0.67 | 1228  | 5.70 | 3.82 | 0.67 | 1256  | 5.50 | 3.69 | 0.67 | 1311  |
| 27             | 22             | 6.38            | 3.51 | 0.55 | 1201  | 6.15 | 3.38 | 0.55 | 1277  | 6.00 | 3.30 | 0.55 | 1311  | 5.75 | 3.16 | 0.55 | 1366  |
| 27             | 24             | 6.70            | 2.88 | 0.43 | 1256  | 6.45 | 2.77 | 0.43 | 1325  | 6.30 | 2.71 | 0.43 | 1366  | 6.10 | 2.62 | 0.43 | 1435  |
| 27             | 26             | 6.90            | 2.14 | 0.31 | 1325  | 6.70 | 2.08 | 0.31 | 1394  | 6.60 | 2.05 | 0.31 | 1435  | 6.40 | 1.98 | 0.31 | 1477  |
| 28             | 18             | 5.88            | 4.88 | 0.83 | 1104  | 5.63 | 4.67 | 0.83 | 1159  | 5.40 | 4.48 | 0.83 | 1214  | 5.20 | 4.32 | 0.83 | 1270  |
| 28             | 20             | 6.13            | 4.35 | 0.71 | 1159  | 5.88 | 4.17 | 0.71 | 1228  | 5.70 | 4.05 | 0.71 | 1256  | 5.50 | 3.91 | 0.71 | 1311  |
| 28             | 22             | 6.38            | 3.76 | 0.59 | 1201  | 6.15 | 3.63 | 0.59 | 1277  | 6.00 | 3.54 | 0.59 | 1311  | 5.75 | 3.39 | 0.59 | 1366  |
| 28             | 24             | 6.70            | 3.15 | 0.47 | 1256  | 6.45 | 3.03 | 0.47 | 1325  | 6.30 | 2.96 | 0.47 | 1366  | 6.10 | 2.87 | 0.47 | 1435  |
| 28             | 26             | 6.90            | 2.42 | 0.35 | 1325  | 6.70 | 2.35 | 0.35 | 1394  | 6.60 | 2.31 | 0.35 | 1435  | 6.40 | 2.24 | 0.35 | 1477  |
| 29             | 18             | 5.88            | 5.11 | 0.87 | 1104  | 5.63 | 4.89 | 0.87 | 1159  | 5.40 | 4.70 | 0.87 | 1214  | 5.20 | 4.52 | 0.87 | 1270  |
| 29             | 20             | 6.13            | 4.59 | 0.75 | 1159  | 5.88 | 4.41 | 0.75 | 1228  | 5.70 | 4.28 | 0.75 | 1256  | 5.50 | 4.13 | 0.75 | 1311  |
| 29             | 22             | 6.38            | 4.02 | 0.63 | 1201  | 6.15 | 3.87 | 0.63 | 1277  | 6.00 | 3.78 | 0.63 | 1311  | 5.75 | 3.62 | 0.63 | 1366  |
| 29             | 24             | 6.70            | 3.42 | 0.51 | 1256  | 6.45 | 3.29 | 0.51 | 1325  | 6.30 | 3.21 | 0.51 | 1366  | 6.10 | 3.11 | 0.51 | 1435  |
| 29             | 26             | 6.90            | 2.69 | 0.39 | 1325  | 6.70 | 2.61 | 0.39 | 1394  | 6.60 | 2.57 | 0.39 | 1435  | 6.40 | 2.50 | 0.39 | 1477  |
| 30             | 18             | 5.88            | 5.35 | 0.91 | 1104  | 5.63 | 5.12 | 0.91 | 1159  | 5.40 | 4.91 | 0.91 | 1214  | 5.20 | 4.73 | 0.91 | 1270  |
| 30             | 20             | 6.13            | 4.84 | 0.79 | 1159  | 5.88 | 4.64 | 0.79 | 1228  | 5.70 | 4.50 | 0.79 | 1256  | 5.50 | 4.35 | 0.79 | 1311  |
| 30             | 22             | 6.38            | 4.27 | 0.67 | 1201  | 6.15 | 4.12 | 0.67 | 1277  | 6.00 | 4.02 | 0.67 | 1311  | 5.75 | 3.85 | 0.67 | 1366  |
| 30             | 24             | 6.70            | 3.69 | 0.55 | 1256  | 6.45 | 3.55 | 0.55 | 1325  | 6.30 | 3.47 | 0.55 | 1366  | 6.10 | 3.36 | 0.55 | 1435  |
| 30             | 26             | 6.90            | 2.97 | 0.43 | 1325  | 6.70 | 2.88 | 0.43 | 1394  | 6.60 | 2.84 | 0.43 | 1435  | 6.40 | 2.75 | 0.43 | 1477  |
| 31             | 18             | 5.88            | 5.58 | 0.95 | 1104  | 5.63 | 5.34 | 0.95 | 1159  | 5.40 | 5.13 | 0.95 | 1214  | 5.20 | 4.94 | 0.95 | 1270  |
| 31             | 20             | 6.13            | 5.08 | 0.83 | 1159  | 5.88 | 4.88 | 0.83 | 1228  | 5.70 | 4.73 | 0.83 | 1256  | 5.50 | 4.57 | 0.83 | 1311  |
| 31             | 22             | 6.38            | 4.53 | 0.71 | 1201  | 6.15 | 4.37 | 0.71 | 1277  | 6.00 | 4.26 | 0.71 | 1311  | 5.75 | 4.08 | 0.71 | 1366  |
| 31             | 24             | 6.70            | 3.95 | 0.59 | 1256  | 6.45 | 3.81 | 0.59 | 1325  | 6.30 | 3.72 | 0.59 | 1366  | 6.10 | 3.60 | 0.59 | 1435  |
| 31             | 26             | 6.90            | 3.24 | 0.47 | 1325  | 6.70 | 3.15 | 0.47 | 1394  | 6.60 | 3.10 | 0.47 | 1435  | 6.40 | 3.01 | 0.47 | 1477  |
| 32             | 18             | 5.88            | 5.82 | 0.99 | 1104  | 5.63 | 5.57 | 0.99 | 1159  | 5.40 | 5.35 | 0.99 | 1214  | 5.20 | 5.15 | 0.99 | 1270  |
| 32             | 20             | 6.13            | 5.33 | 0.87 | 1159  | 5.88 | 5.11 | 0.87 | 1228  | 5.70 | 4.96 | 0.87 | 1256  | 5.50 | 4.79 | 0.87 | 1311  |
| 32             | 22             | 6.38            | 4.78 | 0.75 | 1201  | 6.15 | 4.61 | 0.75 | 1277  | 6.00 | 4.50 | 0.75 | 1311  | 5.75 | 4.31 | 0.75 | 1366  |
| 32             | 24             | 6.70            | 4.22 | 0.63 | 1256  | 6.45 | 4.06 | 0.63 | 1325  | 6.30 | 3.97 | 0.63 | 1366  | 6.10 | 3.84 | 0.63 | 1435  |
| 32             | 26             | 6.90            | 3.52 | 0.51 | 1325  | 6.70 | 3.42 | 0.51 | 1394  | 6.60 | 3.37 | 0.51 | 1435  | 6.40 | 3.26 | 0.51 | 1477  |

**NOTE** Q : Total capacity (kW) SHF : Sensible heat factor DB : Dry-bulb temperature  
 SHC : Sensible heat capacity (kW) INPUT : Total power input (W) WB : Wet-bulb temperature

**PERFORMANCE DATA COOL operation at Rated frequency**

**MUZ-FH50VE**

CAPACITY: 5.0 kW

SHF: 0.73

INPUT: 1380 W

| INDOOR DB (°C) | INDOOR WB (°C) | OUTDOOR DB (°C) |      |      |       |      |      |      |       |      |      |      |       |
|----------------|----------------|-----------------|------|------|-------|------|------|------|-------|------|------|------|-------|
|                |                | 35              |      |      |       | 40   |      |      |       | 46   |      |      |       |
|                |                | Q               | SHC  | SHF  | INPUT | Q    | SHC  | SHF  | INPUT | Q    | SHC  | SHF  | INPUT |
| 21             | 18             | 4.90            | 2.70 | 0.55 | 1352  | 4.50 | 2.48 | 0.55 | 1435  | 4.15 | 2.28 | 0.55 | 1490  |
| 21             | 20             | 5.15            | 2.21 | 0.43 | 1408  | 4.80 | 2.06 | 0.43 | 1477  | 4.45 | 1.91 | 0.43 | 1559  |
| 22             | 18             | 4.90            | 2.89 | 0.59 | 1352  | 4.50 | 2.66 | 0.59 | 1435  | 4.15 | 2.45 | 0.59 | 1490  |
| 22             | 20             | 5.15            | 2.42 | 0.47 | 1408  | 4.80 | 2.26 | 0.47 | 1477  | 4.45 | 2.09 | 0.47 | 1559  |
| 22             | 22             | 5.45            | 1.91 | 0.35 | 1463  | 5.10 | 1.79 | 0.35 | 1546  | 4.75 | 1.66 | 0.35 | 1601  |
| 23             | 18             | 4.90            | 3.09 | 0.63 | 1352  | 4.50 | 2.84 | 0.63 | 1435  | 4.15 | 2.61 | 0.63 | 1490  |
| 23             | 20             | 5.15            | 2.63 | 0.51 | 1408  | 4.80 | 2.45 | 0.51 | 1477  | 4.45 | 2.27 | 0.51 | 1559  |
| 23             | 22             | 5.45            | 2.13 | 0.39 | 1463  | 5.10 | 1.99 | 0.39 | 1546  | 4.75 | 1.85 | 0.39 | 1601  |
| 24             | 18             | 4.90            | 3.28 | 0.67 | 1352  | 4.50 | 3.02 | 0.67 | 1435  | 4.15 | 2.78 | 0.67 | 1490  |
| 24             | 20             | 5.15            | 2.83 | 0.55 | 1408  | 4.80 | 2.64 | 0.55 | 1477  | 4.45 | 2.45 | 0.55 | 1559  |
| 24             | 22             | 5.45            | 2.34 | 0.43 | 1463  | 5.10 | 2.19 | 0.43 | 1546  | 4.75 | 2.04 | 0.43 | 1601  |
| 24             | 24             | 5.75            | 1.78 | 0.31 | 1518  | 5.40 | 1.67 | 0.31 | 1587  | 5.10 | 1.58 | 0.31 | 1656  |
| 25             | 18             | 4.90            | 3.48 | 0.71 | 1352  | 4.50 | 3.20 | 0.71 | 1435  | 4.15 | 2.95 | 0.71 | 1490  |
| 25             | 20             | 5.15            | 3.04 | 0.59 | 1408  | 4.80 | 2.83 | 0.59 | 1477  | 4.45 | 2.63 | 0.59 | 1559  |
| 25             | 22             | 5.45            | 2.56 | 0.47 | 1463  | 5.10 | 2.40 | 0.47 | 1546  | 4.75 | 2.23 | 0.47 | 1601  |
| 25             | 24             | 5.75            | 2.01 | 0.35 | 1518  | 5.40 | 1.89 | 0.35 | 1587  | 5.10 | 1.79 | 0.35 | 1656  |
| 26             | 18             | 4.90            | 3.68 | 0.75 | 1352  | 4.50 | 3.38 | 0.75 | 1435  | 4.15 | 3.11 | 0.75 | 1490  |
| 26             | 20             | 5.15            | 3.24 | 0.63 | 1408  | 4.80 | 3.02 | 0.63 | 1477  | 4.45 | 2.80 | 0.63 | 1559  |
| 26             | 22             | 5.45            | 2.78 | 0.51 | 1463  | 5.10 | 2.60 | 0.51 | 1546  | 4.75 | 2.42 | 0.51 | 1601  |
| 26             | 24             | 5.75            | 2.24 | 0.39 | 1518  | 5.40 | 2.11 | 0.39 | 1587  | 5.10 | 1.99 | 0.39 | 1656  |
| 26             | 26             | 6.05            | 1.63 | 0.27 | 1573  | 5.70 | 1.54 | 0.27 | 1642  | 5.35 | 1.44 | 0.27 | 1711  |
| 27             | 18             | 4.90            | 3.87 | 0.79 | 1352  | 4.50 | 3.56 | 0.79 | 1435  | 4.15 | 3.28 | 0.79 | 1490  |
| 27             | 20             | 5.15            | 3.45 | 0.67 | 1408  | 4.80 | 3.22 | 0.67 | 1477  | 4.45 | 2.98 | 0.67 | 1559  |
| 27             | 22             | 5.45            | 3.00 | 0.55 | 1463  | 5.10 | 2.81 | 0.55 | 1546  | 4.75 | 2.61 | 0.55 | 1601  |
| 27             | 24             | 5.75            | 2.47 | 0.43 | 1518  | 5.40 | 2.32 | 0.43 | 1587  | 5.10 | 2.19 | 0.43 | 1656  |
| 27             | 26             | 6.05            | 1.88 | 0.31 | 1573  | 5.70 | 1.77 | 0.31 | 1642  | 5.35 | 1.66 | 0.31 | 1711  |
| 28             | 18             | 4.90            | 4.07 | 0.83 | 1352  | 4.50 | 3.74 | 0.83 | 1435  | 4.15 | 3.44 | 0.83 | 1490  |
| 28             | 20             | 5.15            | 3.66 | 0.71 | 1408  | 4.80 | 3.41 | 0.71 | 1477  | 4.45 | 3.16 | 0.71 | 1559  |
| 28             | 22             | 5.45            | 3.22 | 0.59 | 1463  | 5.10 | 3.01 | 0.59 | 1546  | 4.75 | 2.80 | 0.59 | 1601  |
| 28             | 24             | 5.75            | 2.70 | 0.47 | 1518  | 5.40 | 2.54 | 0.47 | 1587  | 5.10 | 2.40 | 0.47 | 1656  |
| 28             | 26             | 6.05            | 2.12 | 0.35 | 1573  | 5.70 | 2.00 | 0.35 | 1642  | 5.35 | 1.87 | 0.35 | 1711  |
| 29             | 18             | 4.90            | 4.26 | 0.87 | 1352  | 4.50 | 3.92 | 0.87 | 1435  | 4.15 | 3.61 | 0.87 | 1490  |
| 29             | 20             | 5.15            | 3.86 | 0.75 | 1408  | 4.80 | 3.60 | 0.75 | 1477  | 4.45 | 3.34 | 0.75 | 1559  |
| 29             | 22             | 5.45            | 3.43 | 0.63 | 1463  | 5.10 | 3.21 | 0.63 | 1546  | 4.75 | 2.99 | 0.63 | 1601  |
| 29             | 24             | 5.75            | 2.93 | 0.51 | 1518  | 5.40 | 2.75 | 0.51 | 1587  | 5.10 | 2.60 | 0.51 | 1656  |
| 29             | 26             | 6.05            | 2.36 | 0.39 | 1573  | 5.70 | 2.22 | 0.39 | 1642  | 5.35 | 2.09 | 0.39 | 1711  |
| 30             | 18             | 4.90            | 4.46 | 0.91 | 1352  | 4.50 | 4.10 | 0.91 | 1435  | 4.15 | 3.78 | 0.91 | 1490  |
| 30             | 20             | 5.15            | 4.07 | 0.79 | 1408  | 4.80 | 3.79 | 0.79 | 1477  | 4.45 | 3.52 | 0.79 | 1559  |
| 30             | 22             | 5.45            | 3.65 | 0.67 | 1463  | 5.10 | 3.42 | 0.67 | 1546  | 4.75 | 3.18 | 0.67 | 1601  |
| 30             | 24             | 5.75            | 3.16 | 0.55 | 1518  | 5.40 | 2.97 | 0.55 | 1587  | 5.10 | 2.81 | 0.55 | 1656  |
| 30             | 26             | 6.05            | 2.60 | 0.43 | 1573  | 5.70 | 2.45 | 0.43 | 1642  | 5.35 | 2.30 | 0.43 | 1711  |
| 31             | 18             | 4.90            | 4.66 | 0.95 | 1352  | 4.50 | 4.28 | 0.95 | 1435  | 4.15 | 3.94 | 0.95 | 1490  |
| 31             | 20             | 5.15            | 4.27 | 0.83 | 1408  | 4.80 | 3.98 | 0.83 | 1477  | 4.45 | 3.69 | 0.83 | 1559  |
| 31             | 22             | 5.45            | 3.87 | 0.71 | 1463  | 5.10 | 3.62 | 0.71 | 1546  | 4.75 | 3.37 | 0.71 | 1601  |
| 31             | 24             | 5.75            | 3.39 | 0.59 | 1518  | 5.40 | 3.19 | 0.59 | 1587  | 5.10 | 3.01 | 0.59 | 1656  |
| 31             | 26             | 6.05            | 2.84 | 0.47 | 1573  | 5.70 | 2.68 | 0.47 | 1642  | 5.35 | 2.51 | 0.47 | 1711  |
| 32             | 18             | 4.90            | 4.85 | 0.99 | 1352  | 4.50 | 4.46 | 0.99 | 1435  | 4.15 | 4.11 | 0.99 | 1490  |
| 32             | 20             | 5.15            | 4.48 | 0.87 | 1408  | 4.80 | 4.18 | 0.87 | 1477  | 4.45 | 3.87 | 0.87 | 1559  |
| 32             | 22             | 5.45            | 4.09 | 0.75 | 1463  | 5.10 | 3.83 | 0.75 | 1546  | 4.75 | 3.56 | 0.75 | 1601  |
| 32             | 24             | 5.75            | 3.62 | 0.63 | 1518  | 5.40 | 3.40 | 0.63 | 1587  | 5.10 | 3.21 | 0.63 | 1656  |
| 32             | 26             | 6.05            | 3.09 | 0.51 | 1573  | 5.70 | 2.91 | 0.51 | 1642  | 5.35 | 2.73 | 0.51 | 1711  |

**NOTE** Q : Total capacity (kW) SHF : Sensible heat factor DB : Dry-bulb temperature  
 SHC : Sensible heat capacity (kW) INPUT : Total power input (W) WB : Wet-bulb temperature

**PERFORMANCE DATA HEAT operation at Rated frequency  
MUZ-FH25VE**

CAPACITY: 3.2 kW INPUT: 580 W

| INDOOR DB (°C) | OUTDOOR WB (°C) |       |      |       |      |       |      |       |      |       |      |       |      |       |
|----------------|-----------------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|
|                | -10             |       | -5   |       | 0    |       | 5    |       | 10   |       | 15   |       | 20   |       |
|                | Q               | INPUT | Q    | INPUT | Q    | INPUT | Q    | INPUT | Q    | INPUT | Q    | INPUT | Q    | INPUT |
| 15             | 2.02            | 377   | 2.43 | 452   | 2.85 | 510   | 3.26 | 551   | 3.68 | 586   | 4.06 | 603   | 4.48 | 615   |
| 21             | 1.92            | 406   | 2.30 | 481   | 2.72 | 534   | 3.10 | 574   | 3.52 | 603   | 3.90 | 621   | 4.30 | 644   |
| 26             | 1.73            | 435   | 2.14 | 510   | 2.53 | 563   | 2.94 | 603   | 3.36 | 632   | 3.74 | 650   | 4.16 | 667   |

**MUZ-FH35VE**

CAPACITY: 4.0 kW INPUT: 800 W

| INDOOR DB (°C) | OUTDOOR WB (°C) |       |      |       |      |       |      |       |      |       |      |       |      |       |
|----------------|-----------------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|
|                | -10             |       | -5   |       | 0    |       | 5    |       | 10   |       | 15   |       | 20   |       |
|                | Q               | INPUT | Q    | INPUT | Q    | INPUT | Q    | INPUT | Q    | INPUT | Q    | INPUT | Q    | INPUT |
| 15             | 2.52            | 520   | 3.04 | 624   | 3.56 | 704   | 4.08 | 760   | 4.60 | 808   | 5.08 | 832   | 5.60 | 848   |
| 21             | 2.40            | 560   | 2.88 | 664   | 3.40 | 736   | 3.88 | 792   | 4.40 | 832   | 4.88 | 856   | 5.38 | 888   |
| 26             | 2.16            | 600   | 2.68 | 704   | 3.16 | 776   | 3.68 | 832   | 4.20 | 872   | 4.68 | 896   | 5.20 | 920   |

**MUZ-FH50VE**

CAPACITY: 6.0 kW INPUT: 1480 W

| INDOOR DB (°C) | OUTDOOR WB (°C) |       |      |       |      |       |      |       |      |       |      |       |      |       |
|----------------|-----------------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|
|                | -10             |       | -5   |       | 0    |       | 5    |       | 10   |       | 15   |       | 20   |       |
|                | Q               | INPUT | Q    | INPUT | Q    | INPUT | Q    | INPUT | Q    | INPUT | Q    | INPUT | Q    | INPUT |
| 15             | 3.78            | 962   | 4.56 | 1154  | 5.34 | 1302  | 6.12 | 1406  | 6.90 | 1495  | 7.62 | 1539  | 8.40 | 1569  |
| 21             | 3.60            | 1036  | 4.32 | 1228  | 5.10 | 1362  | 5.82 | 1465  | 6.60 | 1539  | 7.32 | 1584  | 8.07 | 1643  |
| 26             | 3.24            | 1110  | 4.02 | 1302  | 4.74 | 1436  | 5.52 | 1539  | 6.30 | 1613  | 7.02 | 1658  | 7.80 | 1702  |

**NOTE:** Q: Total capacity (kW) INPUT : Total power input (W) DB: Dry-bulb temperature WB: Wet-bulb temperature

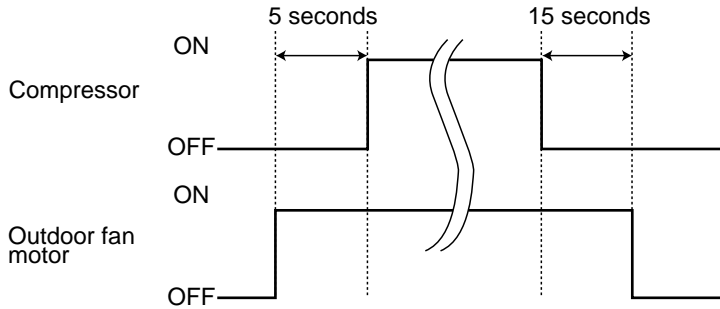
**MUZ-FH25VE  
MUZ-FH35VE  
MUZ-FH50VE**

**9-1. OUTDOOR FAN MOTOR CONTROL**

The fan motor turns ON/OFF, interlocking with the compressor.

[ON] The fan motor turns ON 5 seconds before the compressor starts up.

[OFF] The fan motor turns OFF 15 seconds after the compressor has stopped running.



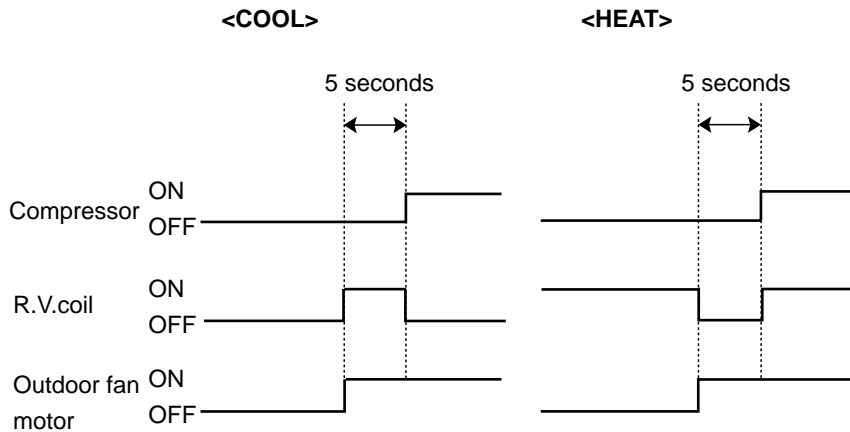
**9-2. R.V. COIL CONTROL**

Heating . . . . . ON

Cooling . . . . . OFF

Dry . . . . . OFF

**NOTE:** The 4-way valve reverses for 5 seconds right before start-up of the compressor.



**9-3. RELATION BETWEEN MAIN SENSOR AND ACTUATOR**

| Sensor  | Purpose                                    | Actuator   |     |                   |          |                  |                |
|---|--|------------|-----|-------------------|----------|------------------|----------------|
|   |  | Compressor | LEV | Outdoor fan motor | R.V.coil | Indoor fan motor | Defrost heater |
| Discharge temperature thermistor              | Protection                                 | ○          | ○   |                   |          |                  |                |
| Indoor coil temperature thermistor            | Cooling: Coil frost prevention             | ○          |     |                   |          |                  |                |
|   | Heating: High pressure protection          | ○          | ○   |                   |          |                  |                |
| Defrost thermistor                            | Heating: Defrosting                        | ○          | ○   | ○                 | ○        | ○                |                |
| Fin temperature thermistor                    | Protection                                 | ○          |     | ○                 |          |                  |                |
| Ambient temperature thermistor                | Cooling: Low ambient temperature operation | ○          | ○   | ○                 |          |                  |                |
|   | Heating: Defrosting (Heater)               |            |     |                   |          |                  | ○              |
| Outdoor heat exchanger temperature thermistor | Cooling: Low ambient temperature operation | ○          | ○   | ○                 |          |                  |                |
|   | Cooling: High pressure protection          | ○          | ○   | ○                 |          |                  |                |



**MUZ-FH25VE**  
**MUZ-FH35VE**  
**MUZ-FH50VE**

**10-1. CHANGE IN DEFROST SETTING**

**Changing defrost finish temperature**

<JS> To change the defrost finish temperature, cut/solder the JS wire of the outdoor inverter P.C. board.  
 (Refer to 11-6-1.)

| Jumper wire |                            | Defrost finish temperature (°C) |            |
|-------------|----------------------------|---------------------------------|------------|
|             |                            | MUZ-FH25/35VE                   | MUZ-FH50VE |
| JS          | Soldered (Initial setting) | 5                               | 10         |
|             | None (Cut)                 | 10                              | 18         |

**10-2. PRE-HEAT CONTROL SETTING**

**PRE-HEAT CONTROL**

**MUZ-FH25/35**

When moisture gets into the refrigerant cycle, it may interfere the start-up of the compressor at low discharge temperature. The pre-heat control prevents this interference. The pre-heat control turns ON when the discharge temperature is 20°C or below. When the pre-heat control turns ON, the compressor is energized. (About 50 W)

**MUZ-FH50**

Prolonged low load operation, in which the thermostat is OFF for a long time, at low outside temperature (0°C or less) may cause the following troubles. To prevent those troubles, activate the pre-heat control.

- 1) If moisture gets into the refrigerant cycle and freezes, it may interfere the start-up of the compressor.
- 2) If liquid refrigerant collects in the compressor, a failure in the compressor may occur.

The pre-heat control turns ON when the compressor temperature is 20°C or below. When the pre-heat control turns ON, the compressor is energized. (About 70 W)

**Pre-heat control setting**

<JK>

ON: To activate the pre-heat control, cut JK wire of the inverter P.C. board.

OFF: To deactivate the pre-heat control, solder JK wire of the inverter P.C. board.

(Refer to 11-6.1)

**NOTE:** When the inverter P.C. board is replaced, check JK wire, and cut/solder it if necessary.

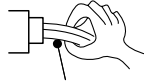
**MUZ-FH25VE****MUZ-FH35VE****MUZ-FH50VE****11-1. CAUTIONS ON TROUBLESHOOTING****1. Before troubleshooting, check the following**

- 1) Check the power supply voltage.
- 2) Check the indoor/outdoor connecting wire for miswiring.

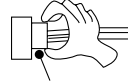
**2. Take care of the following during servicing**

- 1) Before servicing the air conditioner, be sure to turn OFF the main unit first with the remote controller, and then after confirming the horizontal vane is closed, turn OFF the breaker and/or disconnect the power plug.
- 2) Be sure to turn OFF the power supply before removing the front panel, the cabinet, the top panel, and the electronic control P.C. board.
- 3) When removing the electrical parts, be careful of the residual voltage of smoothing capacitor.
- 4) When removing the electronic control P.C. board, hold the edge of the board with care NOT to apply stress on the components.
- 5) When connecting or disconnecting the connectors, hold the housing of the connector. DO NOT pull the lead wires.

&lt;Incorrect&gt;

**Lead wiring**

&lt;Correct&gt;

**Housing point****3. Troubleshooting procedure**

- 1) Check if the OPERATION INDICATOR lamp on the indoor unit is flashing on and off to indicate an abnormality.  
To make sure, check how many times the OPERATION INDICATOR lamp is flashing on and off before starting service work.
- 2) Before servicing, check that the connector and terminal are connected properly.
- 3) When the electronic control P.C. board seems to be defective, check the copper foil pattern for disconnection and the components for bursting and discoloration.
- 4) Refer to 11-2 and 11-3.

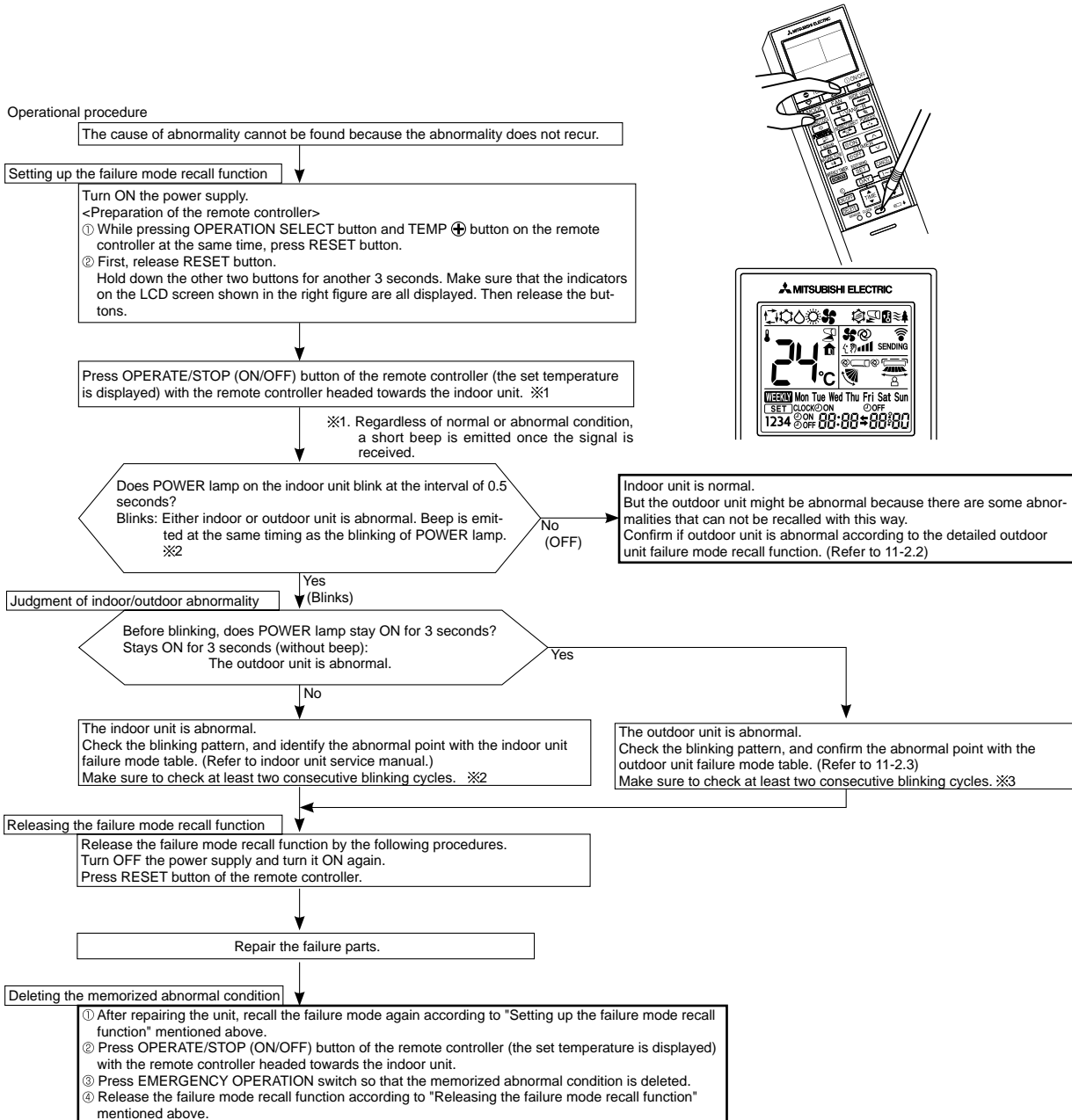
## 11-2. FAILURE MODE RECALL FUNCTION

Outline of the function

This air conditioner can memorize the abnormal condition which has occurred once.

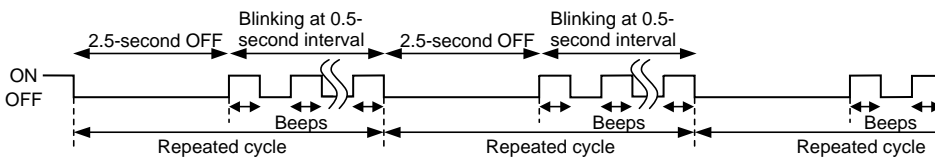
Even though LED indication listed on the troubleshooting check table (11-3.) disappears, the memorized failure details can be recalled.

### 1. Flow chart of failure mode recall function for the indoor/outdoor unit

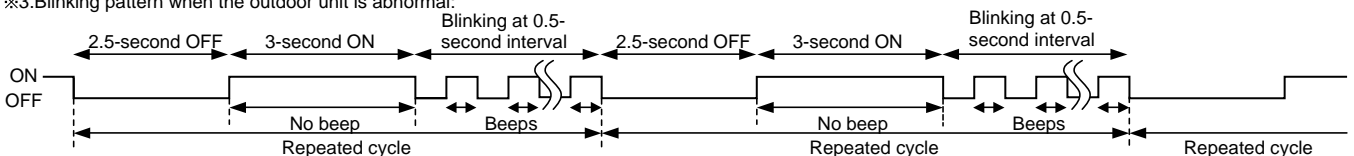


**NOTE:** 1. Make sure to release the failure mode recall function after it is set up, otherwise the unit cannot operate properly.  
2. If the abnormal condition is not deleted from the memory, the last abnormal condition is kept memorized.

※2. Blinking pattern when the indoor unit is abnormal:

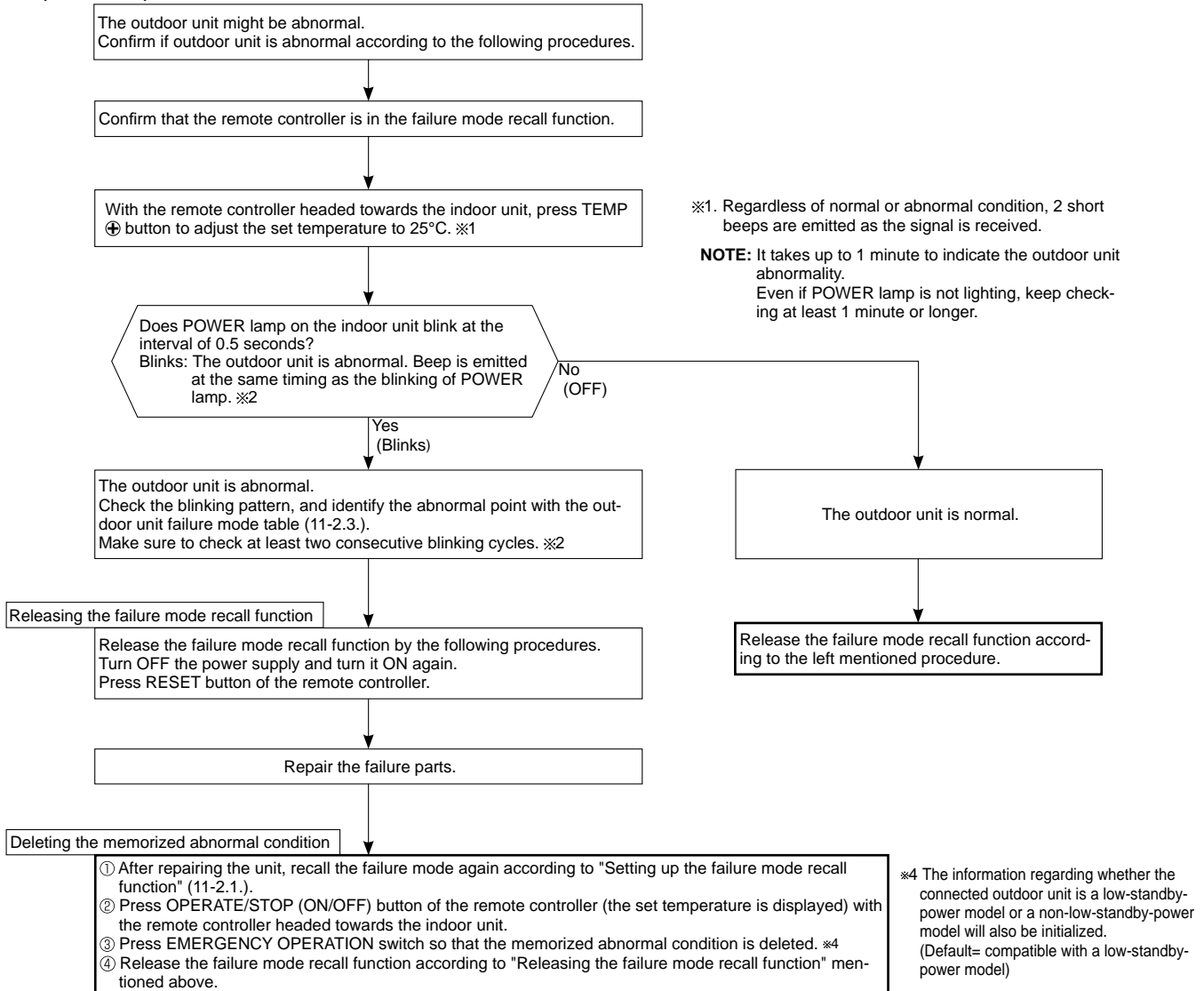


※3. Blinking pattern when the outdoor unit is abnormal:



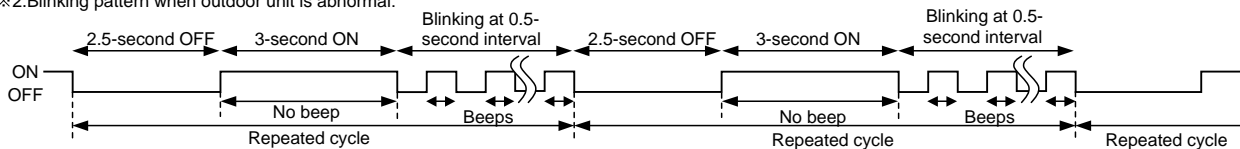
## 2. Flow chart of the detailed outdoor unit failure mode recall function

### Operational procedure



**NOTE:** 1. Make sure to release the failure mode recall function after it is set up, otherwise the unit cannot operate properly.  
2. If the abnormal condition is not deleted from the memory, the last abnormal condition is kept memorized.

※2. Blinking pattern when outdoor unit is abnormal:



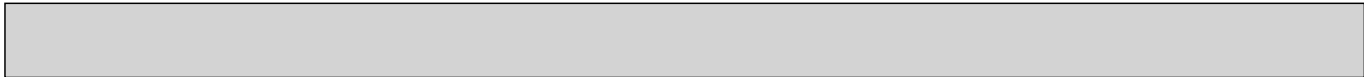
### 3. Outdoor unit failure mode table

| POWER lamp (Indoor unit)                      | Abnormal point (Failure mode/protection)                                    | LED indication (Outdoor P.C. board) | Condition   | Remedy  | Indoor/outdoor unit failure mode recall function | Outdoor unit failure mode recall function |
|---|---|-------------------------------------|---|---|--|---|
| OFF   | None (Normal)   | —                                   | —   | —   | —  | —   |
| 1-time flash<br>2.5 seconds<br>OFF            | Indoor/outdoor communication, receiving error                               | —                                   | Any signals from the inverter P.C. board cannot be received normally for 3 minutes.   | •Refer to 11-5. ㉓ How to check miswiring and serial signal error.   | ○  | ○   |
|   | Indoor/outdoor communication, receiving error                               | —                                   | Although the inverter P.C. board sends signal "0", signal "1" has been received 30 consecutive times.   | •Refer to 11-5. ㉓ How to check miswiring and serial signal error.   |  |   |
| 2-time flash<br>2.5 seconds<br>OFF            | Outdoor power system  | —                                   | Overcurrent protection cut-out operates 3 consecutive times within 1 minute after the compressor gets started.  | •Reconnect connectors.<br>•Refer to 11-5. ㉔ How to check inverter/compressor".<br>•Check stop valve.  | ○  | ○   |
| 3-time flash<br>2.5 seconds<br>OFF            | Discharge temperature thermistor  | 1-time flash every 2.5 seconds      | Thermistor shorts or opens during compressor running.   | •Refer to 11-5. ㉔ "Check of outdoor thermistors".<br>Defective outdoor thermistors can be identified by checking the blinking pattern of LED. | ○  | ○   |
|   | Defrost thermistor  | —                                   |   |   |  |   |
|   | Fin temperature thermistor  | 3-time flash<br>2.5 seconds OFF     |   |   |  |   |
|   | P.C. board temperature thermistor   | 4-time flash<br>2.5 seconds OFF     |   |   |  |   |
|   | Ambient temperature thermistor  | 2-time flash<br>2.5 seconds OFF     |   |   |  |   |
| Outdoor heat exchanger temperature thermistor | —   |                                     |   |   |  |   |
| 4-time flash<br>2.5 seconds<br>OFF            | Overcurrent   | 11-time flash<br>2.5 seconds OFF    | Large current flows into power module (IC700) (FH25/35)/ IGBT module (IC700) (FH50).  | •Reconnect compressor connector.<br>•Refer to 11-5. ㉔ How to check inverter/compressor".<br>•Check stop valve.                                | —  | ○   |
|   | Compressor synchronous abnormality (Compressor start-up failure protection) | 12-time flash<br>2.5 seconds OFF    | Waveform of compressor current is distorted.  | •Reconnect compressor connector.<br>•Refer to 11-5. ㉔ How to check inverter/compressor".  | —  | ○   |
| 5-time flash<br>2.5 seconds<br>OFF            | Discharge temperature   | —                                   | Temperature of discharge temperature thermistor exceeds 116°C, compressor stops.<br>Compressor can restart if discharge temperature thermistor reads 100°C or less 3 minutes later.   | •Check refrigerant circuit and refrigerant amount.<br>•Refer to 11-5. ㉔ Check of LEV".  | —  | ○   |
| 6-time flash<br>2.5 seconds<br>OFF            | High pressure   | —                                   | Temperature indoor coil thermistor exceeds 70°C in HEAT mode.<br>Temperature defrost thermistor exceeds 70°C in COOL mode.  | •Check refrigerant circuit and refrigerant amount.<br>•Check stop valve.  | —  | ○   |
| 7-time flash<br>2.5 seconds<br>OFF            | Fin temperature/ P.C. board temperature                                     | 7-time flash<br>2.5 seconds OFF     | Temperature of fin temperature thermistor on the inverter P.C. board exceeds 75 ~ 86°C (FH25/35)/75 ~ 80°C (FH50), or temperature of P.C. board temperature thermistor on the inverter P.C. board exceeds 72 ~ 85°C (FH25/35)/70 ~ 75°C (FH50). | •Check around outdoor unit.<br>•Check outdoor unit air passage.<br>•Refer to 11-5. ㉔ Check of outdoor fan motor".                             | —  | ○   |
| 8-time flash<br>2.5 seconds<br>OFF            | Outdoor fan motor   | —                                   | Outdoor fan has stopped 3 times in a row within 30 seconds after outdoor fan start-up.  | •Refer to 11-5. ㉔ Check of outdoor fan motor".<br>Refer to 11-5. ㉔ Check of inverter P.C. board".   | —  | ○   |
| 9-time flash<br>2.5 seconds<br>OFF            | Nonvolatile memory data   | 5-time flash<br>2.5 seconds OFF     | Nonvolatile memory data cannot be read properly.  | •Replace the inverter P.C. board.   | ○  | ○   |
|   | Power module (IC700) (FH25/35)<br>IGBT module (IC700) (FH50)                | 6-time flash<br>2.5 seconds OFF     | The interface short circuit occurs in the output of the power module (IC700) (FH25/35)/IGBT module (IC700) (FH50).<br>The compressor winding shorts circuit.  | •Refer to 11-5. ㉔ How to check inverter/compressor".  |  |   |
| 10-time flash<br>2.5 seconds<br>OFF           | Discharge temperature   | —                                   | Temperature of discharge temperature thermistor has been 50°C or less for 20 minutes.   | •Refer to 11-5. ㉔ Check of LEV".<br>•Check refrigerant circuit and refrigerant amount.  | —  | ○   |
| 11-time flash<br>2.5 seconds<br>OFF           | Bus-bar voltage (DC)  | 8-time flash<br>2.5 seconds OFF     | Bus-bar voltage of inverter cannot be detected normally.  | •Refer to 11-5. ㉔ How to check inverter/compressor".  | —  | ○   |
|   | Each phase current of compressor  | 9-time flash<br>2.5 seconds OFF     | Each phase current of compressor cannot be detected normally.   |   |  |   |
| 14-time flash<br>2.5 seconds<br>OFF           | Stop valve (Closed valve)   | 14-time flash<br>2.5 seconds OFF    | Closed valve is detected by compressor current.   | •Check stop valve.  | ○  | ○   |

**NOTE:** Blinking patterns of this mode differ from the ones of TROUBLESHOOTING CHECK TABLE (11-3.).

### 11-3. TROUBLESHOOTING CHECK TABLE

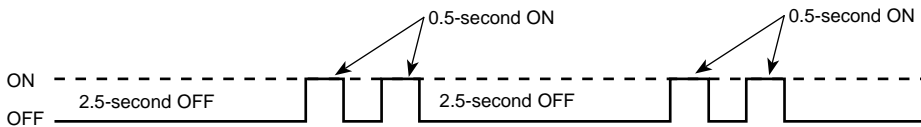
| No.  | Symptom  | LED indication                                     | Abnormal point/<br>Condition  | Condition   |  | Remedy  |
|------|--|--|---|---|--|---|
| 1    | Outdoor unit does not operate.                                 | 1-time flash every 2.5 seconds                     | Outdoor power system  | Overcurrent protection cut-out operates 3 consecutive times within 1 minute after the compressor gets started.  |  | <ul style="list-style-type: none"> <li>•Reconnect connector of compressor.</li> <li>•Refer to 11-5.Ⓐ "How to check inverter/compressor".</li> <li>•Check stop valve.</li> </ul>   |
| 2    |  |  | Outdoor thermistors   | Discharge temperature thermistor, fin temperature thermistor, defrost thermistor, P.C. board temperature thermistor, outdoor heat exchanger temperature thermistor or ambient temperature thermistor shorts or opens during compressor running. |  | <ul style="list-style-type: none"> <li>•Refer to 11-5.Ⓒ "Check of outdoor thermistors".</li> </ul>  |
| 3    |  |  | Outdoor control system  | Nonvolatile memory data cannot be read properly.<br>(POWER lamp of the indoor unit lights up or flashes 7-time.)  |  | <ul style="list-style-type: none"> <li>•Replace inverter P.C. board.</li> </ul>   |
| 4    |  | 6-time flash<br>2.5 seconds OFF                    | Serial signal   | The communication fails between the indoor and outdoor unit for 3 minutes.  |  | <ul style="list-style-type: none"> <li>•Check connection between the inverter P.C. board and the relay P.C. board. (FH50)</li> <li>•Refer to 11-5.Ⓜ "How to check miswiring and serial signal error.</li> </ul>   |
| 5    |  | 11-time flash<br>2.5 seconds OFF                   | Stop valve/<br>Closed valve   | Closed valve is detected by compressor current.   |  | <ul style="list-style-type: none"> <li>•Check stop valve.</li> </ul>  |
| 6    |  | 14-time flash<br>2.5 seconds OFF                   | Outdoor unit<br>(Other abnormality)   | Outdoor unit is defective.  |  | <ul style="list-style-type: none"> <li>•Refer to 11-2.2. "Flow chart of the detailed outdoor unit failure mode recall function".</li> </ul>   |
| 7    | 'Outdoor unit stops and restarts 3 minutes later' is repeated. | 2-time flash<br>2.5 seconds OFF                    | Overcurrent protection  | Large current flows into power module (IC700) (FH25/35)/ IGBT module (IC700) (FH50).  |  | <ul style="list-style-type: none"> <li>•Reconnect connector of compressor.</li> <li>•Refer to 11-5.Ⓐ "How to check inverter/compressor".</li> <li>•Check stop valve.</li> </ul>   |
| 8    |  | 3-time flash<br>2.5 seconds OFF                    | Discharge temperature<br>overheat protection  | Temperature of discharge temperature thermistor exceeds 116°C, compressor stops. Compressor can restart if discharge temperature thermistor reads 100°C or less 3 minutes later.  |  | <ul style="list-style-type: none"> <li>•Check refrigerant circuit and refrigerant amount.</li> <li>•Refer to 11-5.Ⓚ "Check of LEV".</li> </ul>  |
| 9    |  | 4-time flash<br>2.5 seconds OFF                    | Fin temperature<br>/P.C. board temperature thermistor<br>overheat protection  | Temperature of fin temperature thermistor on the heat sink exceeds 75 ~ 86°C (FH25/35)/75 ~ 80°C (FH50) or temperature of P.C. board temperature thermistor on the inverter P.C. board exceeds 72 ~ 85°C (FH25/35)/70 ~ 75°C (FH50).            |  | <ul style="list-style-type: none"> <li>•Check around outdoor unit.</li> <li>•Check outdoor unit air passage.</li> <li>•Refer to 11-5.Ⓛ "Check of outdoor fan motor".</li> </ul>   |
| 10   |  | 5-time flash<br>2.5 seconds OFF                    | High pressure protection  | Indoor coil thermistor exceeds 70°C in HEAT mode. Defrost thermistor exceeds 70°C in COOL mode.   |  | <ul style="list-style-type: none"> <li>•Check refrigerant circuit and refrigerant amount.</li> <li>•Check stop valve.</li> </ul>  |
| 11   |  | 8-time flash<br>2.5 seconds OFF                    | Compressor synchronous abnormality  | The waveform of compressor current is distorted.  |  | <ul style="list-style-type: none"> <li>•Reconnect connector of compressor.</li> <li>•Refer to 11-5.Ⓐ "How to check inverter/compressor".</li> </ul>   |
| 12   |  | 10-time flash<br>2.5 seconds OFF                   | Outdoor fan motor   | Outdoor fan has stopped 3 times in a row within 30 seconds after outdoor fan start-up.  |  | <ul style="list-style-type: none"> <li>•Refer to 11-5.Ⓛ "Check of outdoor fan motor.</li> <li>•Refer to 11-5.Ⓛ "Check of inverter P.C. board.</li> </ul>  |
| 13   |  | 12-time flash<br>2.5 seconds OFF                   | Each phase current of compressor  | Each phase current of compressor cannot be detected normally.   |  | <ul style="list-style-type: none"> <li>•Refer to 11-5.Ⓐ "How to check inverter/compressor".</li> </ul>  |
| 14   |  | 13-time flash<br>2.5 seconds OFF                   | Bus-bar voltage (DC)  | Bus-bar voltage of inverter cannot be detected normally.  |  | <ul style="list-style-type: none"> <li>•It occurs with following case. Instantaneous power voltage drop. (Short time power failure) (FH50)</li> <li>•Refer to 11-5.Ⓞ "Check of power supply". (FH50)</li> <li>•Refer to 11-5.Ⓐ "How to check inverter/compressor".</li> </ul> |
| 15   | Outdoor unit operates.   | 1-time flash<br>2.5 seconds OFF                    | Frequency drop by current protection  | FH25/35   | When the input current exceeds approximately 10A (FH25)/10.5A (FH35), compressor frequency lowers.   | <ul style="list-style-type: none"> <li>The unit is normal, but check the following.</li> <li>•Check if indoor filters are clogged.</li> <li>•Check if refrigerant is short.</li> <li>•Check if indoor/outdoor unit air circulation is short cycled.</li> </ul>                |
| FH50 |  |  |   | Current from power outlet is nearing breaker capacity.  |  |   |
| 16   |  | 3-time flash<br>2.5 seconds OFF                    | Frequency drop by high pressure protection  | Temperature of indoor coil thermistor exceeds 55°C in HEAT mode, compressor frequency lowers.   |  |   |
|      |  |  |   | Indoor coil thermistor reads 8°C or less in COOL mode, compressor frequency lowers.   |  |   |
| 17   | 4-time flash<br>2.5 seconds OFF                                | Frequency drop by discharge temperature protection | Temperature of discharge temperature thermistor exceeds 111°C, compressor frequency lowers.                         |   | <ul style="list-style-type: none"> <li>•Check refrigerant circuit and refrigerant amount.</li> <li>•Refer to 11-5.Ⓚ "Check of LEV".</li> <li>•Refer to 11-5.Ⓒ "Check of outdoor thermistors".</li> </ul> |   |
| 18   | MUZ-FH25/35<br>5-time flash<br>2.5 seconds OFF                 | Outside temperature thermistor protection          | When the outside temperature thermistor shorts or opens, protective operation without that thermistor is performed. |   | <ul style="list-style-type: none"> <li>•Refer to 11-5. Ⓒ Check of outdoor thermistors.</li> </ul>  |   |



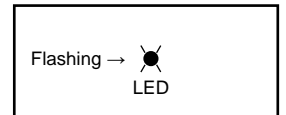
| No. | Symptom                         | LED indication                  | Abnormal point/Condition   | Condition   | Remedy  |
|-----|---------------------------------|---------------------------------|--|---|---|
| 19  | Outdoor unit operates.          | 7-time flash<br>2.5 seconds OFF | Low discharge temperature protection                                     | Temperature of discharge temperature thermistor has been 50°C or less for 20 minutes.   | <ul style="list-style-type: none"> <li>Refer to 11-5. Ⓢ "Check of LEV".</li> <li>Check refrigerant circuit and refrigerant amount.</li> </ul>   |
| 20  |                                 | 8-time flash<br>2.5 seconds OFF | <b>MUZ-FH25/35</b><br>PAM protection<br>PAM: Pulse Amplitude Modulation  | The overcurrent flows into PFC (Power factor correction : IC820) or the bus-bar voltage reaches 394 V or more, PAM stops and restarts.                                  | This is not malfunction. PAM protection will be activated in the following cases:<br>1 Instantaneous power voltage drop. (Short time power failure)<br>2 When the power supply voltage is high.   |
|     |                                 |                                 | <b>MUZ-FH50</b><br>Zero cross detecting circuit                          | Zero cross signal cannot be detected.   | <ul style="list-style-type: none"> <li>It occurs with following cases.<br/>               1 Instantaneous power voltage drop. (Short time power failure)<br/>               2 Distortion of primary voltage</li> <li>Refer to 11-5. Ⓣ "Check of power supply".</li> </ul> |
| 21  | 9-time flash<br>2.5 seconds OFF | Inverter check mode             | The connector of compressor is disconnected, inverter check mode starts. | <ul style="list-style-type: none"> <li>Check if the connector of the compressor is correctly connected. Refer to 11-5. ⓐ "How to check inverter/compressor".</li> </ul> |   |

**NOTE:** 1. The location of LED is illustrated at the right figure. Refer to 11-6.1.  
 2. LED is lighted during normal operation.

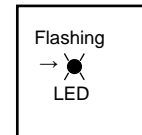
The flashing frequency shows the number of times the LED blinks after every 2.5-second OFF.  
 (Example) When the flashing frequency is "2".



Inverter P.C. board  
**MUZ-FH25/35VE**



**MUZ-FH50VE**



#### 11-4. TROUBLE CRITERION OF MAIN PARTS

#### MUZ-FH25VE MUZ-FH35VE MUZ-FH50VE

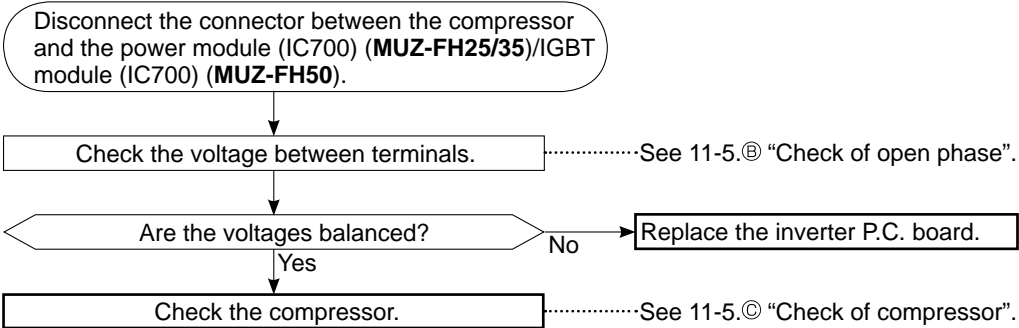
| Part name   | Check method and criterion   | Figure             |            |               |               |             |             |             |             |           |           |  |
|---|--|--------------------|------------|---------------|---------------|-------------|-------------|-------------|-------------|-----------|-----------|--|
| Defrost thermistor (RT61)<br>Fin temperature thermistor (RT64)<br>Ambient temperature thermistor (RT65)<br>Outdoor heat exchanger temperature thermistor (RT68) | Measure the resistance with a tester.<br><br>Refer to 11-6. "Test point diagram and voltage", 1. "Inverter P.C. board", for the chart of thermistor.   |                    |            |               |               |             |             |             |             |           |           |  |
| Discharge temperature thermistor (RT62)   | Measure the resistance with a tester. Before measurement, hold the thermistor with your hands to warm it up.<br><br>Refer to 11-6. "Test point diagram and voltage", 1. "Inverter P.C. board", for the chart of thermistor.  |                    |            |               |               |             |             |             |             |           |           |  |
| Compressor  | Measure the resistance between terminals using a tester. (Temperature: -10 ~ 40°C)<br><table border="1" style="margin-left: 20px;"> <thead> <tr> <th rowspan="2"></th> <th colspan="2">Normal (Ω)</th> </tr> <tr> <th>MUZ-FH25/35VE</th> <th>MUZ-FH50VE</th> </tr> </thead> <tbody> <tr> <td>U-V</td> <td rowspan="3">1.66 ~ 2.26</td> <td rowspan="3">0.87 ~ 1.18</td> </tr> <tr> <td>U-W</td> </tr> <tr> <td>V-W</td> </tr> </tbody> </table>                              |                    | Normal (Ω) |               | MUZ-FH25/35VE | MUZ-FH50VE  | U-V         | 1.66 ~ 2.26 | 0.87 ~ 1.18 | U-W       | V-W       |  |
|   | Normal (Ω)   |                    |            |               |               |             |             |             |             |           |           |  |
|   | MUZ-FH25/35VE  | MUZ-FH50VE         |            |               |               |             |             |             |             |           |           |  |
| U-V   | 1.66 ~ 2.26  | 0.87 ~ 1.18        |            |               |               |             |             |             |             |           |           |  |
| U-W   |  |                    |            |               |               |             |             |             |             |           |           |  |
| V-W   |  |                    |            |               |               |             |             |             |             |           |           |  |
| Outdoor fan motor   | Measure the resistance between lead wires using a tester. (Temperature: -10 ~ 40°C)<br><table border="1" style="margin-left: 20px;"> <thead> <tr> <th rowspan="2">Color of lead wire</th> <th colspan="2">Normal (Ω)</th> </tr> <tr> <th>MUZ-FH25/35VE</th> <th>MUZ-FH50VE</th> </tr> </thead> <tbody> <tr> <td>RED - BLK</td> <td rowspan="3">12 ~ 16</td> <td rowspan="3">12 ~ 17</td> </tr> <tr> <td>BLK - WHT</td> </tr> <tr> <td>WHT - RED</td> </tr> </tbody> </table> | Color of lead wire | Normal (Ω) |               | MUZ-FH25/35VE | MUZ-FH50VE  | RED - BLK   | 12 ~ 16     | 12 ~ 17     | BLK - WHT | WHT - RED |  |
| Color of lead wire  | Normal (Ω)   |                    |            |               |               |             |             |             |             |           |           |  |
|   | MUZ-FH25/35VE  | MUZ-FH50VE         |            |               |               |             |             |             |             |           |           |  |
| RED - BLK   | 12 ~ 16  | 12 ~ 17            |            |               |               |             |             |             |             |           |           |  |
| BLK - WHT   |  |                    |            |               |               |             |             |             |             |           |           |  |
| WHT - RED   |  |                    |            |               |               |             |             |             |             |           |           |  |
| R. V. coil (21S4)   | Measure the resistance using a tester. (Temperature: -10 ~ 40°C)<br><table border="1" style="margin-left: 20px;"> <thead> <tr> <th colspan="2">Normal (kΩ)</th> </tr> <tr> <th>MUZ-FH25/35VE</th> <th>MUZ-FH50VE</th> </tr> </thead> <tbody> <tr> <td>1.41 ~ 2.00</td> <td>1.19 ~ 1.78</td> </tr> </tbody> </table>  | Normal (kΩ)        |            | MUZ-FH25/35VE | MUZ-FH50VE    | 1.41 ~ 2.00 | 1.19 ~ 1.78 |             |             |           |           |  |
| Normal (kΩ)   |  |                    |            |               |               |             |             |             |             |           |           |  |
| MUZ-FH25/35VE   | MUZ-FH50VE   |                    |            |               |               |             |             |             |             |           |           |  |
| 1.41 ~ 2.00   | 1.19 ~ 1.78  |                    |            |               |               |             |             |             |             |           |           |  |
| Expansion valve coil (LEV)  | Measure the resistance using a tester. (Temperature: -10 ~ 40°C)<br><table border="1" style="margin-left: 20px;"> <thead> <tr> <th>Color of lead wire</th> <th>Normal (Ω)</th> </tr> </thead> <tbody> <tr> <td>RED - ORN</td> <td rowspan="4">37 ~ 54</td> </tr> <tr> <td>RED - WHT</td> </tr> <tr> <td>RED - BLU</td> </tr> <tr> <td>RED - YLW</td> </tr> </tbody> </table>   | Color of lead wire | Normal (Ω) | RED - ORN     | 37 ~ 54       | RED - WHT   | RED - BLU   | RED - YLW   |             |           |           |  |
| Color of lead wire  | Normal (Ω)   |                    |            |               |               |             |             |             |             |           |           |  |
| RED - ORN   | 37 ~ 54  |                    |            |               |               |             |             |             |             |           |           |  |
| RED - WHT   |  |                    |            |               |               |             |             |             |             |           |           |  |
| RED - BLU   |  |                    |            |               |               |             |             |             |             |           |           |  |
| RED - YLW   |  |                    |            |               |               |             |             |             |             |           |           |  |





### 11-5. TROUBLESHOOTING FLOW

#### A How to check inverter/compressor



#### B Check of open phase

- With the connector between the compressor and the power module (IC700) (MUZ-FH25/35)/IGBT module (IC700) (MUZ-FH50) disconnected, activate the inverter and check if the inverter is normal by measuring the voltage balance between the terminals.

Output voltage is 50 - 130 V. (The voltage may differ according to the tester.)

<< Operation method >>

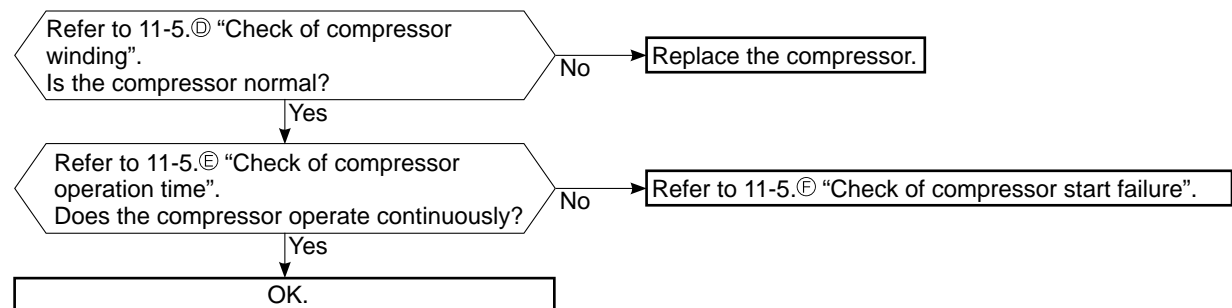
Start cooling or heating operation by pressing EMERGENCY OPERATION switch on the indoor unit. (TEST RUN OPERATION: Refer to 8-3.)

<< Measurement point >>

- At 3 points ※ Measure AC voltage between the lead wires at 3 points.
- BLK (U)-WHT (V)
- BLK (U)-RED (W)
- WHT(V)-RED (W)

- NOTE:**
1. Output voltage varies according to power supply voltage.
  2. Measure the voltage by analog type tester.
  3. During this check, LED of the inverter P.C. board flashes 9 times. (Refer to 11-6.1.)

#### C Check of compressor



### D Check of compressor winding

- Disconnect the connector between the compressor and the power module (IC700) (**MUZ-FH25/35**)/IGBT module (IC700) (**MUZ-FH50**), and measure the resistance between the compressor terminals.

<<Measurement point>>

at 3 points

BLK-WHT

BLK-RED

WHT-RED

※ Measure the resistance between the lead wires at 3 points.

<<Judgement>>

Refer to 11-4.

0 [Ω] .....Abnormal [short]

Infinite [Ω] .....Abnormal [open]

**NOTE:** Be sure to zero the ohmmeter before measurement.

### E Check of compressor operation time

- Connect the compressor and activate the inverter. Then measure the time until the inverter stops due to over current.

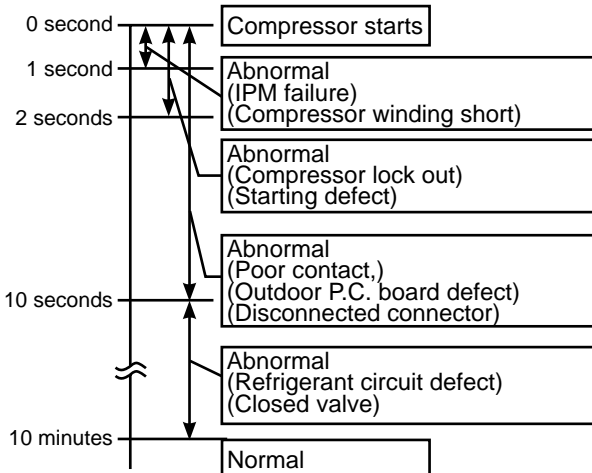
<<Operation method>>

Start heating or cooling operation by pressing EMERGENCY OPERATION switch on the indoor unit. (TEST RUN OPERATION: Refer to 8-3.)

<<Measurement>>

Measure the time from the start of compressor to the stop of compressor due to overcurrent.

<<Judgement>>



### F Check of compressor start failure

Confirm that ①~④ is normal.

•Electrical circuit check

①. Contact of the compressor connector

②. Output voltage of inverter P.C. board and balance of them (See 11-5.③)

③. Direct current voltage between DB61(+) and (-) (**MUZ-FH25/35**)/JP715(+) and JP30(-) (**MUZ-FH50**) on the inverter P.C. board

④. Voltage between outdoor terminal block S1-S2

Does the compressor run for 10 seconds or more after it starts?

Yes

Check the refrigerant circuit.  
Check the stop valve.

No

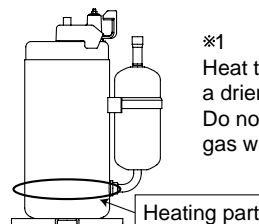
After the compressor is heated with a drier, does the compressor start? ※1

No

Replace the compressor.

Yes

Compressor start failure. Activate pre-heat control.  
(Refer to 10-2. "PRE-HEAT CONTROL SETTING")



※1 Heat the compressor with a drier for about 20 minutes. Do not recover refrigerant gas while heating.

### ⑨ Check of outdoor thermistors

Disconnect the connector of thermistor in the outdoor P.C. board (see below table), and measure the resistance of thermistor.

Is the resistance of thermistor normal?  
(Refer to 11-6.1.)

No

Replace the thermistor except RT64.  
When RT64 is abnormal, replace the inverter P.C. board.

Yes

Reconnect the connector of thermistor.  
Turn ON the power supply and press EMERGENCY OPERATION switch.

Does the unit operate for 10 minutes or more  
without showing thermistor abnormality?

No

Replace the inverter P.C. board.

Yes

OK.  
(Cause is poor contact.)

#### MUZ-FH25/35

| Thermistor                         | Symbol | Connector, Pin No.          | Board               |
|------------------------------------|--------|-----------------------------|---------------------|
| Defrost                            | RT61   | Between CN641 pin1 and pin2 | Inverter P.C. board |
| Discharge temperature              | RT62   | Between CN641 pin3 and pin4 |                     |
| Fin temperature                    | RT64   | Between CN642 pin1 and pin2 |                     |
| Ambient temperature                | RT65   | Between CN643 pin1 and pin2 |                     |
| Outdoor heat exchanger temperature | RT68   | Between CN644 pin1 and pin3 |                     |

#### MUZ-FH50

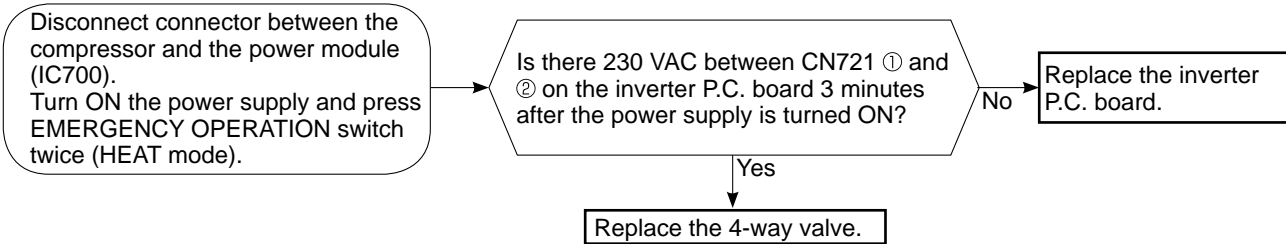
| Thermistor                         | Symbol | Connector, Pin No.          | Board               |
|------------------------------------|--------|-----------------------------|---------------------|
| Defrost                            | RT61   | Between CN671 pin1 and pin2 | Inverter P.C. board |
| Discharge temperature              | RT62   | Between CN671 pin3 and pin4 |                     |
| Fin temperature                    | RT64   | Between CN673 pin1 and pin2 |                     |
| Ambient temperature                | RT65   | Between CN672 pin1 and pin2 |                     |
| Outdoor heat exchanger temperature | RT68   | Between CN671 pin5 and pin6 |                     |

## H Check of R.V. coil

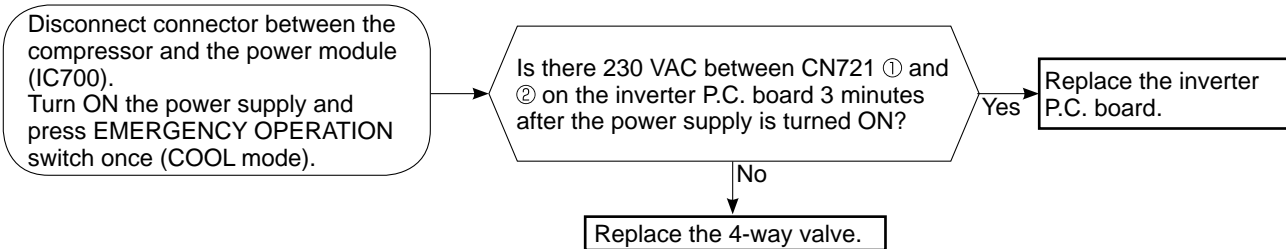
### MUZ-FH25/35

- ※ First of all, measure the resistance of R.V. coil to check if the coil is defective. Refer to 11-4.
- ※ In case CN721 is disconnected or R.V. coil is open, voltage is generated between the terminal pins of the connector although no signal is being transmitted to R.V. coil.  
Check if CN721 is connected.

#### Unit operates COOL mode even if it is set to HEAT mode.



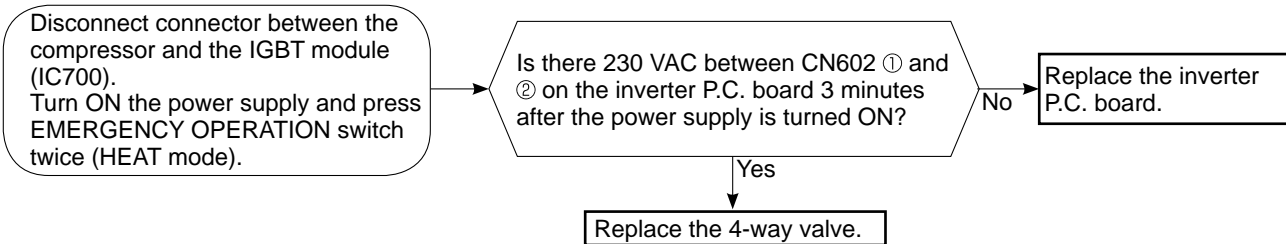
#### Unit operates HEAT mode even if it is set to COOL mode.



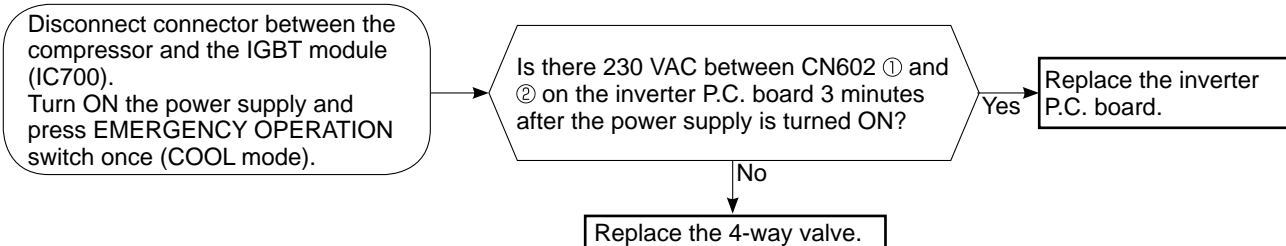
### MUZ-FH50

- ※ First of all, measure the resistance of R.V. coil to check if the coil is defective. Refer to 11-4.
- ※ In case CN602 is disconnected or R.V. coil is open, voltage is generated between the terminal pins of the connector although no signal is being transmitted to R.V. coil.  
Check if CN602 is connected.

#### Unit operates COOL mode even if it is set to HEAT mode.



#### Unit operates HEAT mode even if it is set to COOL mode.





**① Check of outdoor fan motor**

Disconnect the connectors CN931 and CN932 from the inverter P.C. board.  
Check the connection between the connector CN931 and CN932.

Is the resistance between each terminal of outdoor fan motor normal?  
(Refer to 11-4.)

Yes

Disconnect CN932 from the inverter P.C. board, and turn on the power supply.

Rotate the outdoor fan motor manually and measure the voltage of CN931.  
Between 1(+) and 5(-)  
Between 2(+) and 5(-)  
Between 3(+) and 5(-)

No

(Fixed to either 5 or 0 VDC)

Does the voltage between each terminal become 5 and 0 VDC repeatedly?

No

Yes

Does the outdoor fan motor rotate smoothly?

No

Yes

Replace the outdoor fan motor.

Replace the inverter P.C. board.

## Ⓜ Check of power supply

Disconnect the connector between the compressor and the power module (IC700) (MUZ-FH25/35)/IGBT module (IC700) (MUZ-FH50).  
Turn ON power supply and press EMERGENCY OPERATION switch.

Does POWER lamp on the indoor unit light up?

No

Rectify indoor/outdoor connecting wire.

Yes

Is there voltage 230 VAC between the indoor terminal block S1 and S2?

No

Replace the indoor electronic control P.C. board.

Yes

Is there bus-bar voltage 260 - 370 VDC between DB61 (+) and DB61 (-) (MUZ-FH25/35)/325 - 370 VDC between JP715 (+) and JP30 (-) (MUZ-FH50) on the inverter P.C. board? (Refer to 11-6.1.)

Yes

Does LED on the inverter P.C. board light up or flash? (Refer to 11-6.1.)

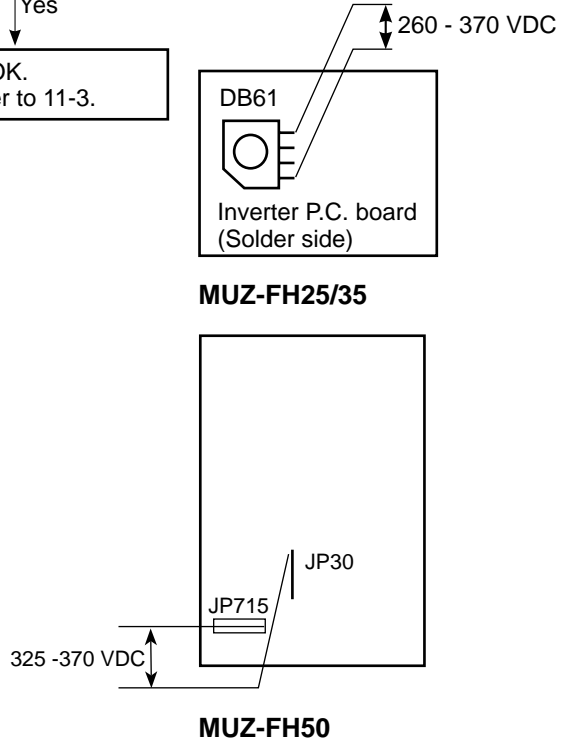
No

Replace the inverter P.C. board.

No

Check the electric parts in main circuit.

If light up, OK.  
If flash, refer to 11-3.

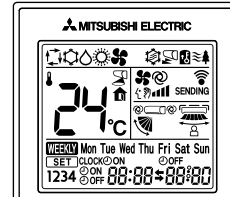
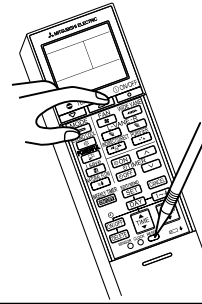


## K Check of LEV (Expansion valve)

Turn ON the power supply.

<Preparation of the remote controller>

- ① While pressing both OPERATION SELECT button and TEMP  $\oplus$  button on the remote controller at the same time, press RESET button.
- ② First, release RESET button.  
Hold down the other two buttons for another 3 seconds. Make sure that the indicators on the LCD screen shown in the right figure are all displayed. Then release the buttons.



Press OPERATE/STOP (ON/OFF) button of the remote controller (the set temperature is displayed) with the remote controller headed towards the indoor unit. ※1

Expansion valve operates in full-opening direction.

Do you hear the expansion valve "click, click....." ?  
Do you feel the expansion valve vibrate on touching it ?

Yes

OK

No

Is LEV coil properly fixed to the expansion valve?

No

Properly fix the LEV coil to the expansion valve.

Yes

Does the resistance of LEV coil have the characteristics? (Refer to 11-4.)

Yes

Measure each voltage between connector pins of CN724 on the inverter P.C. board.  
1. Pin③(-) — Pin①(+)  
2. Pin④(-) — Pin①(+)  
3. Pin⑤(-) — Pin①(+)  
4. Pin⑥(-) — Pin①(+)  
Is there about 3 - 5 VAC between each?  
**NOTE:** Measure the voltage by an analog tester.

No

Replace the inverter P.C. board.

No

Replace the LEV coil.

Yes

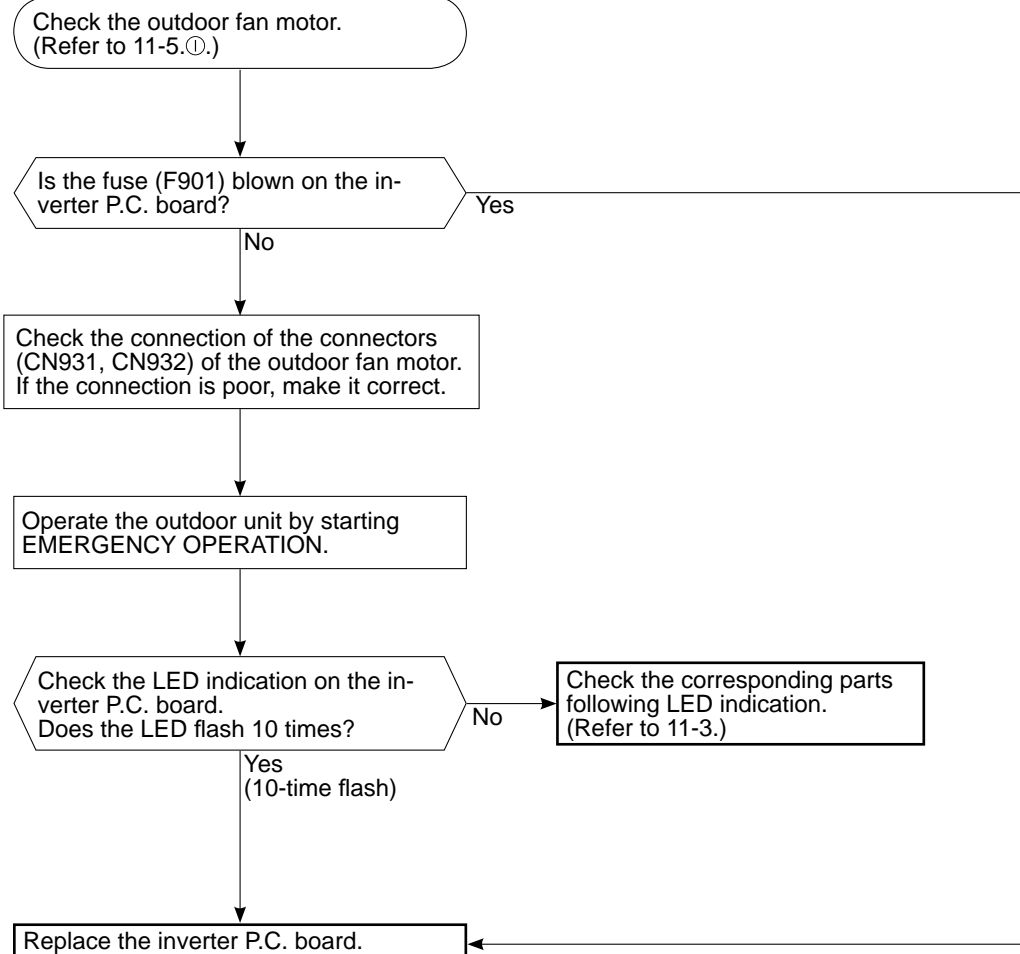
Replace the expansion valve.

※1. Regardless of normal or abnormal condition, a short beep is emitted once the signal is received.

**NOTE:** After check of LEV, do the undermentioned operations.

1. Turn OFF the power supply and turn it ON again.
2. Press RESET button on the remote controller.

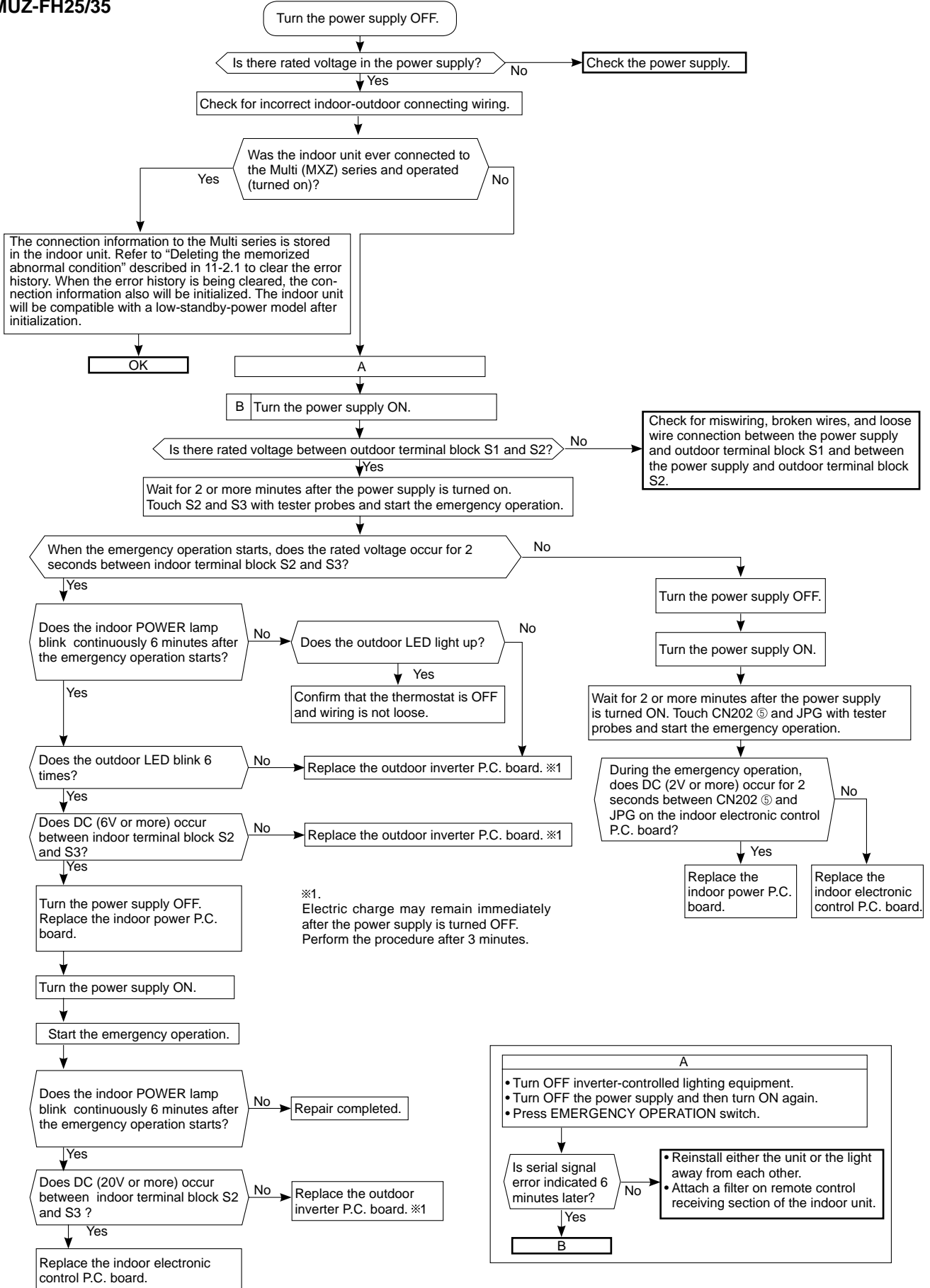
## Ⓛ Check of inverter P.C. board



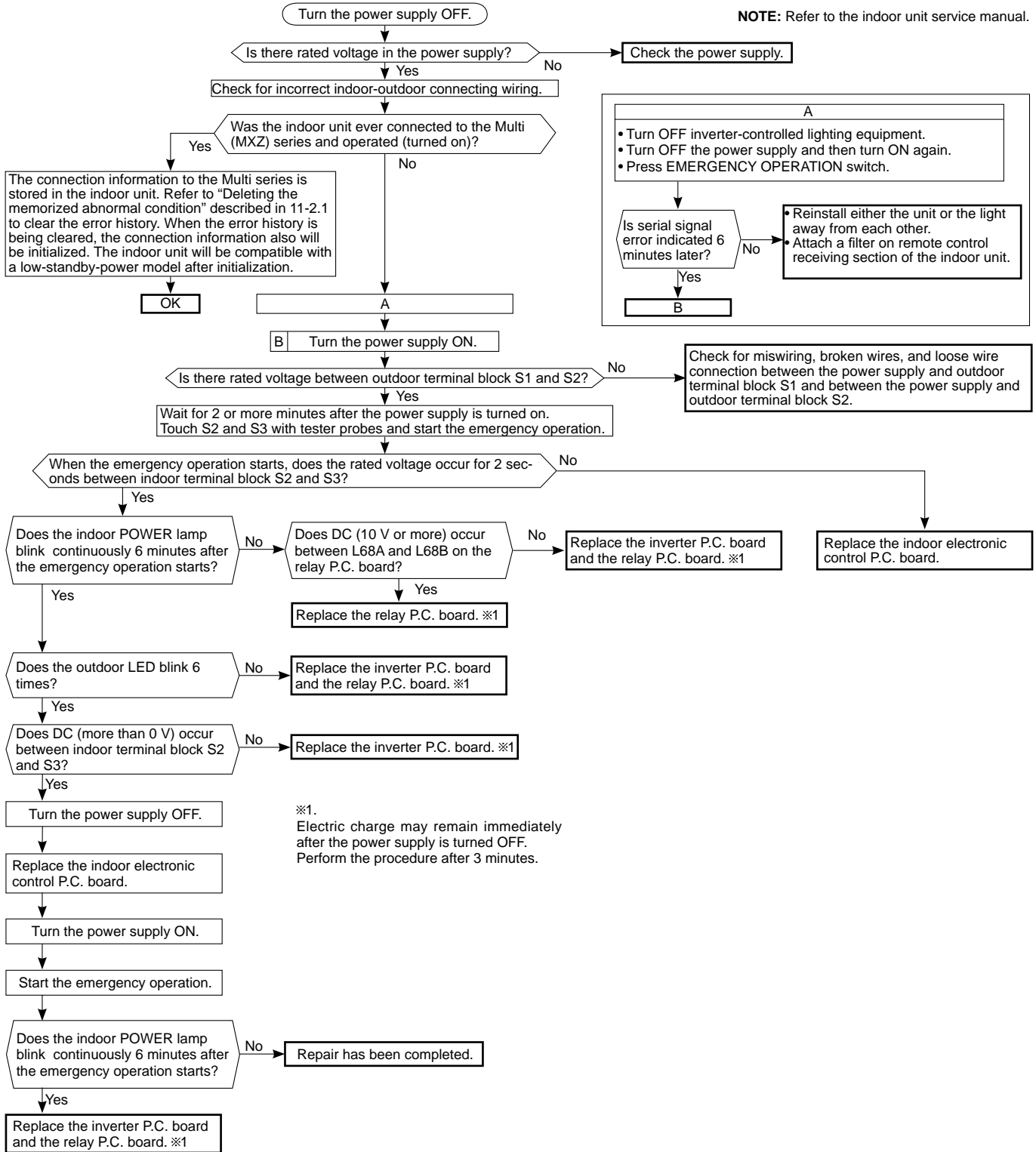


# M How to check miswiring and serial signal error

MUZ-FH25/35

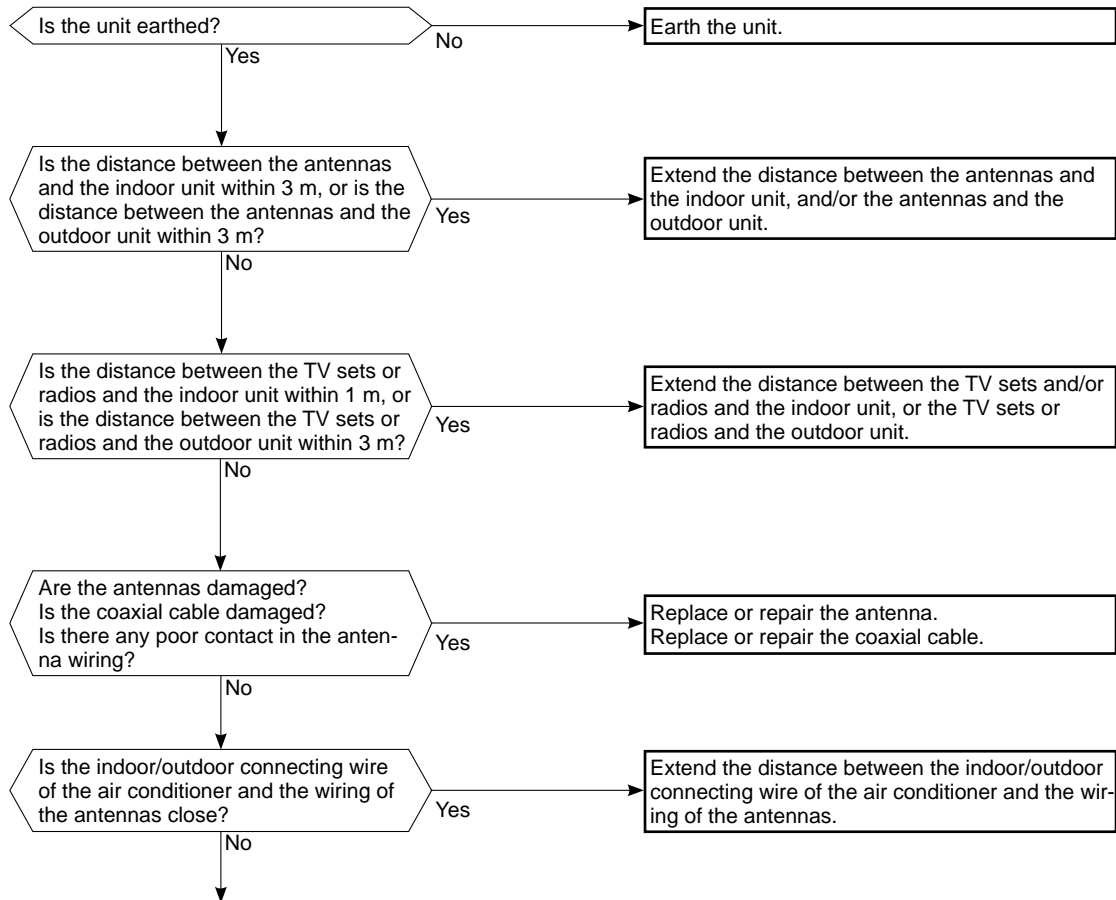


# MUZ-FH50





**N Electromagnetic noise enters into TV sets or radios**



Even if all of the above conditions are fulfilled, the electromagnetic noise may enter, depending on the electric field strength or the installation condition (combination of specific conditions such as antennas or wiring). Check the following before asking for service.

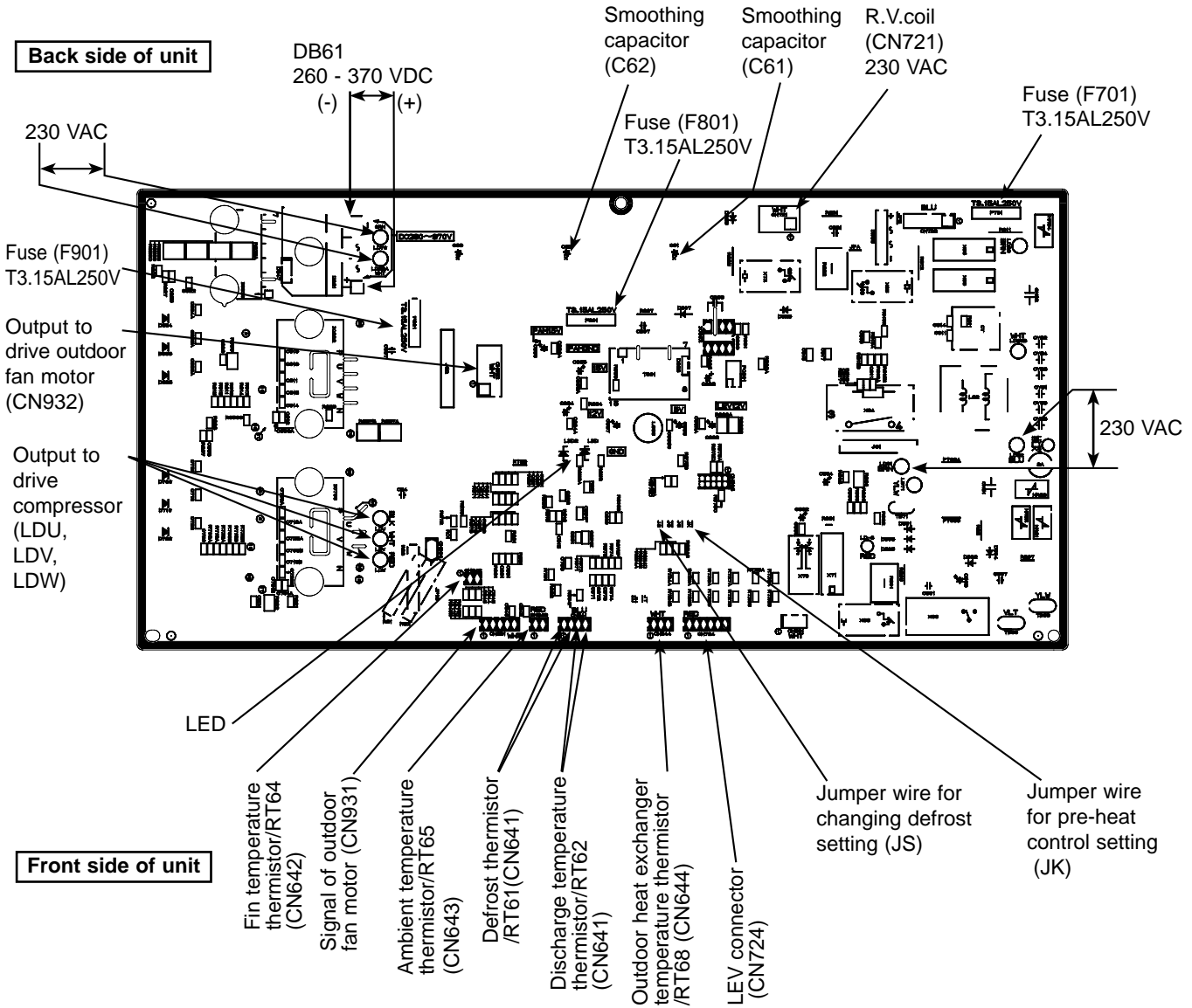
1. Devices affected by the electromagnetic noise  
TV sets, radios (FM/AM broadcast, shortwave)
2. Channel, frequency, broadcast station affected by the electromagnetic noise
3. Channel, frequency, broadcast station unaffected by the electromagnetic noise
4. Layout of:  
indoor/outdoor unit of the air conditioner, indoor/outdoor wiring, earth wire, antennas, wiring from antennas, receiver
5. Electric field intensity of the broadcast station affected by the electromagnetic noise
6. Presence or absence of amplifier such as booster
7. Operation condition of air conditioner when the electromagnetic noise enters in
  - 1) Turn OFF the power supply once, and then turn ON the power supply. In this situation, check for the electromagnetic noise.
  - 2) Within 3 minutes after turning ON the power supply, press OPERATE/STOP (ON/OFF) button on the remote controller for power ON, and check for the electromagnetic noise.
  - 3) After a short time (3 minutes later after turning ON), the outdoor unit starts running. During operation, check for the electromagnetic noise.
  - 4) Press OPERATE/STOP (ON/OFF) button on the remote controller for power OFF, when the outdoor unit stops but the indoor/outdoor communication still runs on. In this situation, check for the electromagnetic noise.

# 11-6. TEST POINT DIAGRAM AND VOLTAGE

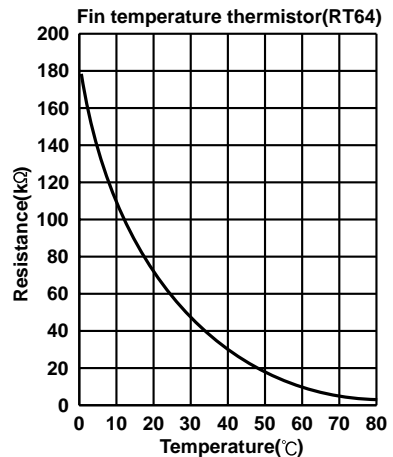
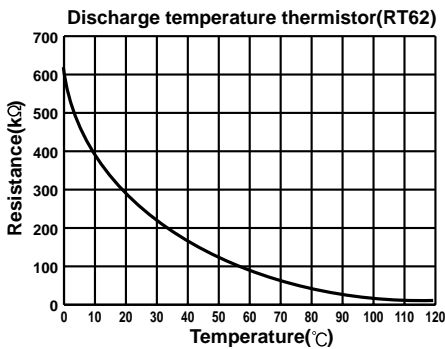
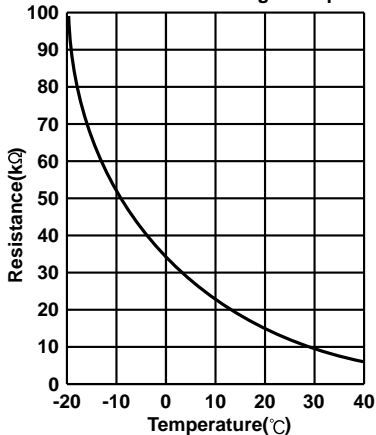
## 1. Inverter P.C. board

MUZ-FH25VE

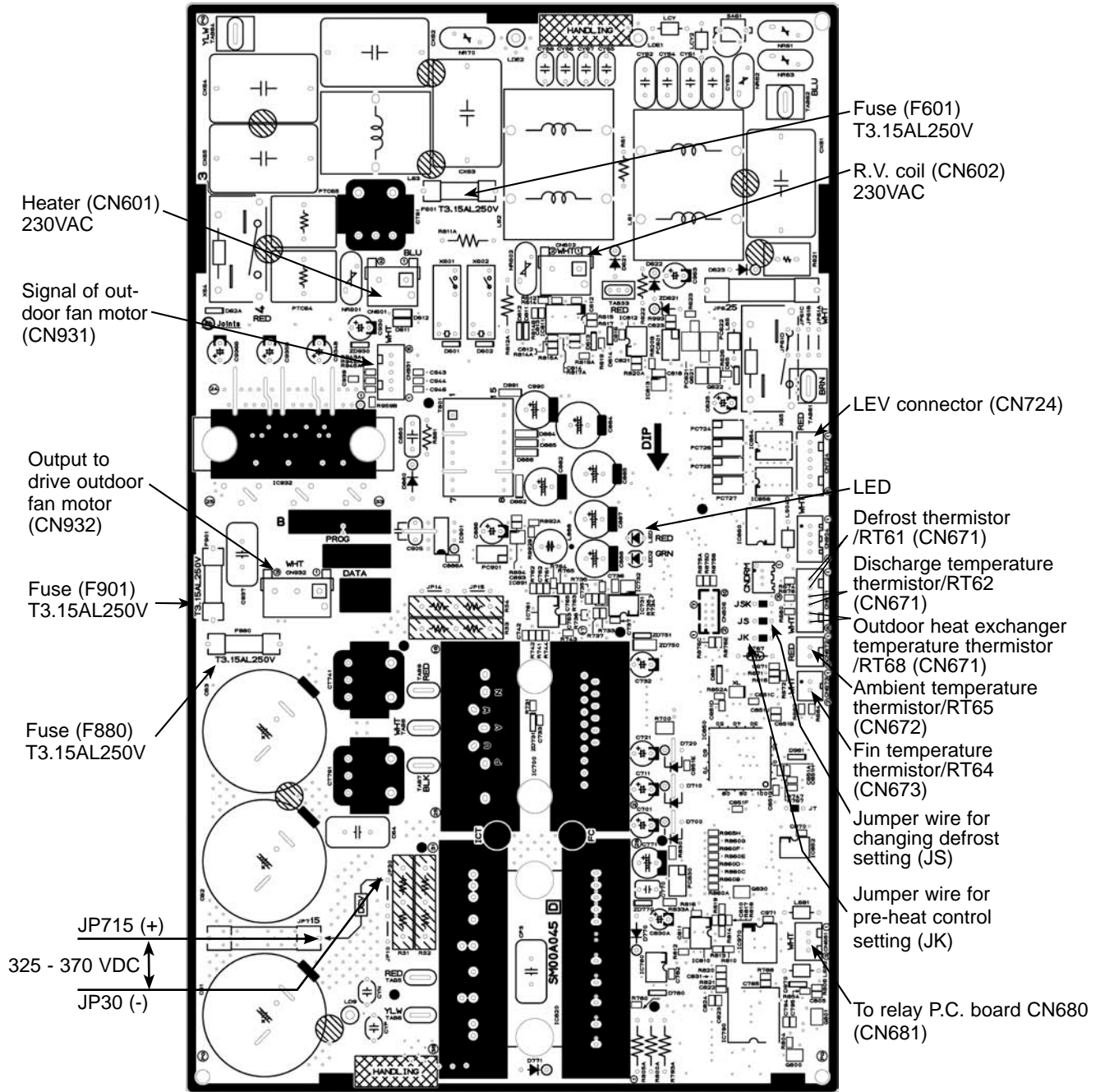
MUZ-FH35VE



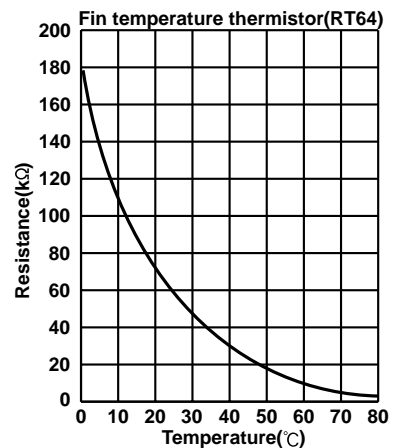
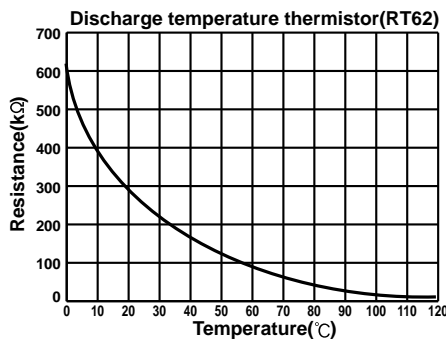
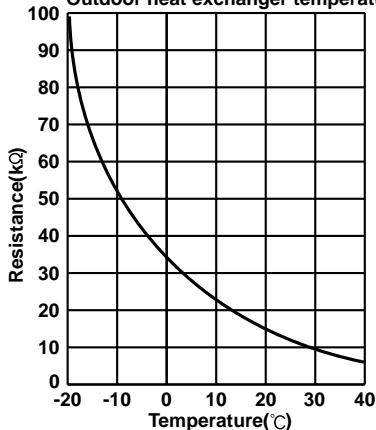
Defrost thermistor (RT61)  
Ambient temperature thermistor (RT65)  
Outdoor heat exchanger temperature thermistor (RT68)



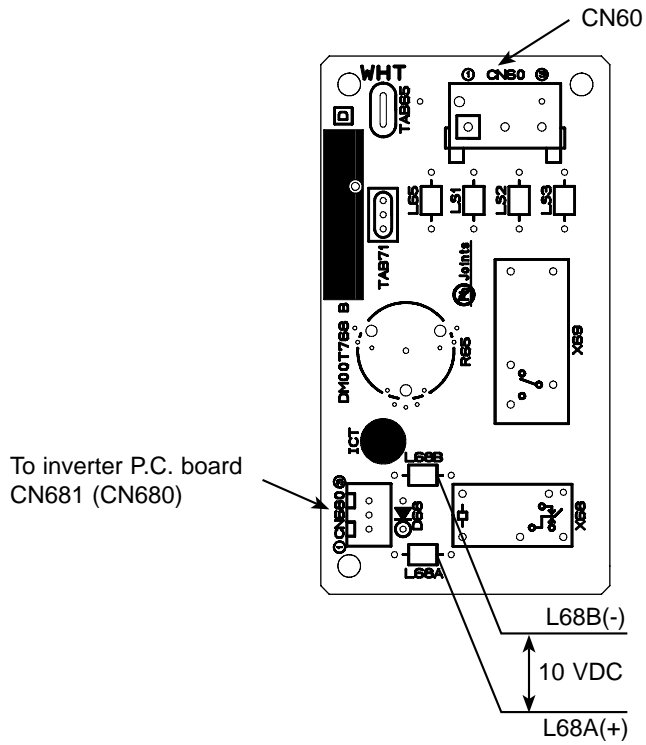
# MUZ-FH50VE



Defrost thermistor(RT61)  
Ambient temperature thermistor(RT65)  
Outdoor heat exchanger temperature thermistor(RT68)



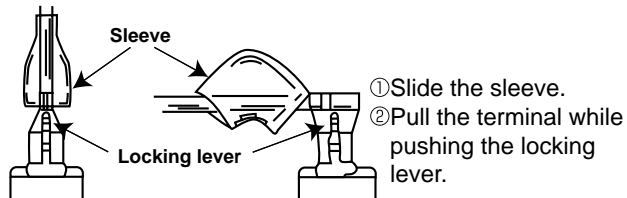
2. Relay P.C. board  
MUZ-FH50VE



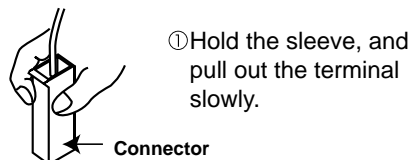
## &lt;"Terminal with locking mechanism" Detaching points&gt;

The terminal which has the locking mechanism can be detached as shown below.  
There are two types (refer to (1) and (2)) of the terminal with locking mechanism.  
The terminal without locking mechanism can be detached by pulling it out.  
Check the shape of the terminal before detaching.

(1) Slide the sleeve and check if there is a locking lever or not.



(2) The terminal with this connector has the locking mechanism.



### 12-1. MUZ-FH25VE MUZ-FH35VE

**NOTE:** Turn OFF power supply before disassembly.

| OPERATING PROCEDURE   | PHOTOS   |
|---|--|
| <p><b>1. Removing the cabinet</b></p> <ol style="list-style-type: none"> <li>(1) Remove the screw fixing the service panel.</li> <li>(2) Pull down the service panel and remove it.</li> <li>(3) Disconnect the power supply and indoor/outdoor connecting wire.</li> <li>(4) Remove the screws fixing the top panel.</li> <li>(5) Remove the top panel.</li> <li>(6) Remove the screws fixing the cabinet.</li> <li>(7) Remove the cabinet.</li> <li>(8) Remove the screws fixing the back panel.</li> <li>(9) Remove the back panel.</li> </ol> | <p><b>Photo 1</b></p> <p>Screws of the top panel</p> <p>Screws of the top panel</p> <p>Back panel</p> <p>Screw of the back panel</p> <p>Screws of the cabinet</p> <p>Service panel</p> <p><b>Photo 2</b></p> <p>Screw of the cabinet</p> <p>Screws of the terminal block support and the back panel</p> <p>Screw of the service panel</p> <p>Direction to remove</p> <p>Screws of the cabinet</p> <p>Hooks</p> |

## OPERATING PROCEDURE

### 2. Removing the inverter assembly, inverter P.C. board

- (1) Remove the cabinet and panels. (Refer to 1.)
- (2) Disconnect the lead wire to the reactor and the following connectors:  
<Inverter P.C. board>  
CN721 (R.V. coil)  
CN931, CN932 (Fan motor)  
CN641 (Defrost thermistor and discharge temperature thermistor)  
CN643 (Ambient temperature thermistor)  
CN644 (Outdoor heat exchanger temperature thermistor)  
CN724 (LEV)
- (3) Remove the compressor connector (CN61).
- (4) Remove the screws fixing the heat sink support and the separator.
- (5) Remove the fixing screws of the terminal block support and the back panel.
- (6) Remove the inverter assembly.
- (7) Remove the screw of the earth wire and screw of the terminal block support.
- (8) Remove the heat sink support from the P.C. board support.
- (9) Remove the screw of the inverter P.C. board and remove the inverter P.C. board from the P.C. board support.

### 3. Removing R.V. coil

- (1) Remove the cabinet and panels. (Refer to 1.)
- (2) Disconnect the following connectors:  
<Inverter P.C. board>  
CN721 (R.V. coil)
- (3) Remove the R.V. coil.

### 4. Removing the discharge temperature thermistor, defrost thermistor, outdoor heat exchanger temperature thermistor and ambient temperature thermistor

- (1) Remove the cabinet and panels. (Refer to 1.)
- (2) Disconnect the lead wire to the reactor and the following connectors:  
<Inverter P.C. board>  
CN641 (Defrost thermistor and discharge temperature thermistor)  
CN643 (Ambient temperature thermistor)  
CN644 (Outdoor heat exchanger temperature thermistor)
- (3) Pull out the discharge temperature thermistor from its holder.
- (4) Pull out the defrost thermistor from its holder. (Photo 6)
- (5) Pull out the outdoor heat exchanger temperature thermistor from its holder. (Photo 6)
- (6) Pull out the ambient temperature thermistor from its holder.

## PHOTOS

Photo 3

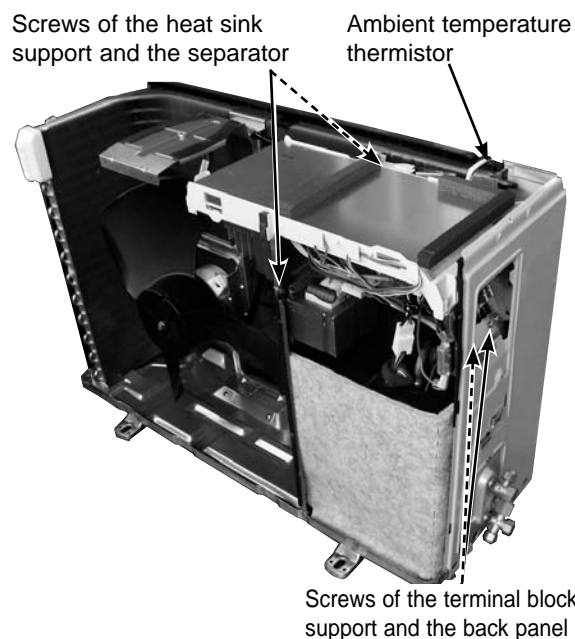


Photo 4 (Inverter assembly)

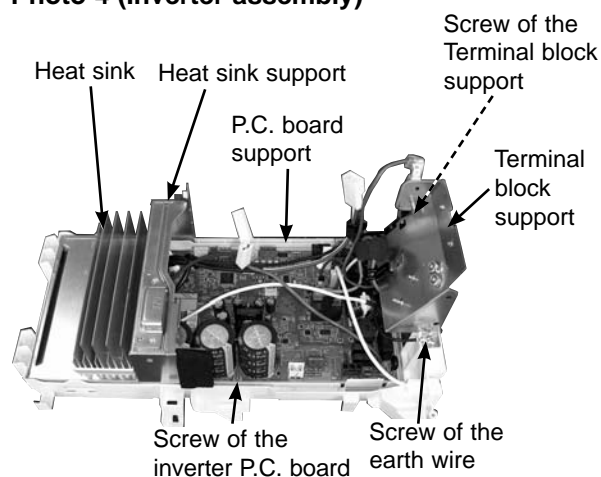


Photo 5





## OPERATING PROCEDURE

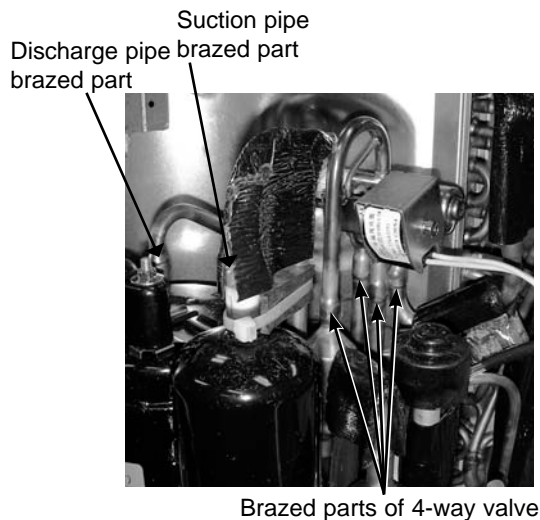
### 5. Removing outdoor fan motor

- (1) Remove the cabinet and panels. (Refer to 1.)
- (2) Disconnect the following connectors:  
<Inverter P.C. board>  
CN931, CN932 (Fan motor)
- (3) Remove the propeller nut.
- (4) Remove the propeller.
- (5) Remove the screws fixing the fan motor.
- (6) Remove the fan motor.

### 6. Removing the compressor and 4-way valve

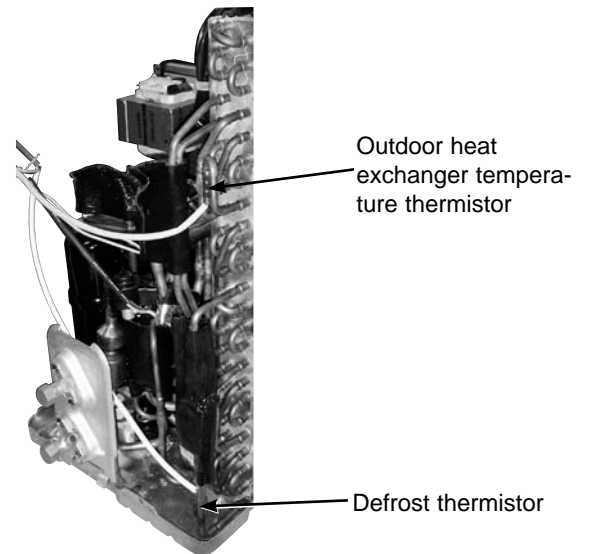
- (1) Remove the cabinet and panels. (Refer to 1.)
- (2) Remove the inverter assembly. (Refer to 2.)
- (3) Recover gas from the refrigerant circuit.  
**NOTE:** Recover gas from the pipes until the pressure gauge shows 0 kg/cm<sup>2</sup> (0 MPa).
- (4) Detach the brazed part of the suction and the discharge pipe connected with compressor.
- (5) Remove the nuts of compressor legs.
- (6) Remove the compressor.
- (7) Detach the brazed part of pipes connected with 4-way valve.

#### Photo 8

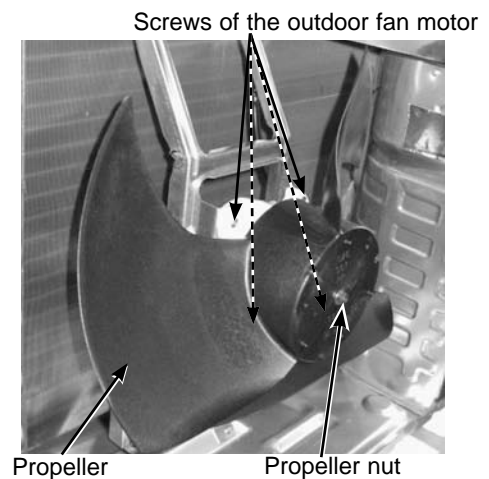


## PHOTOS

#### Photo 6

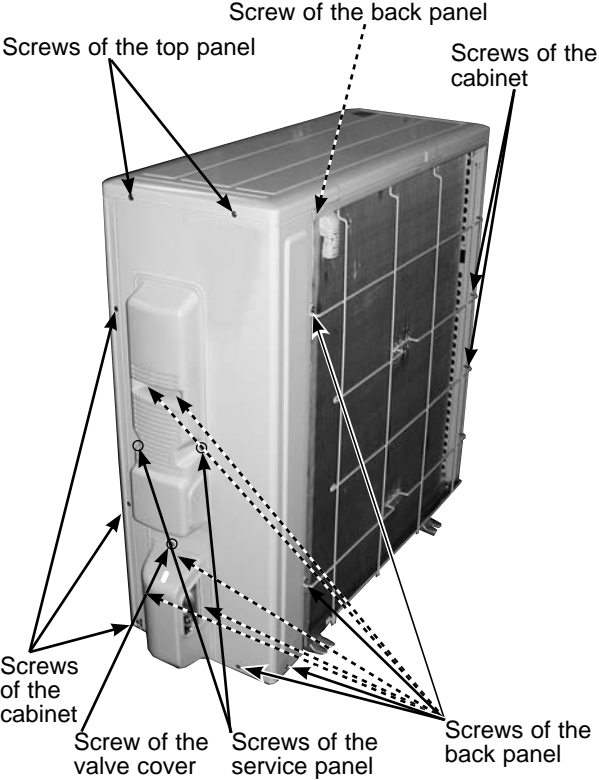
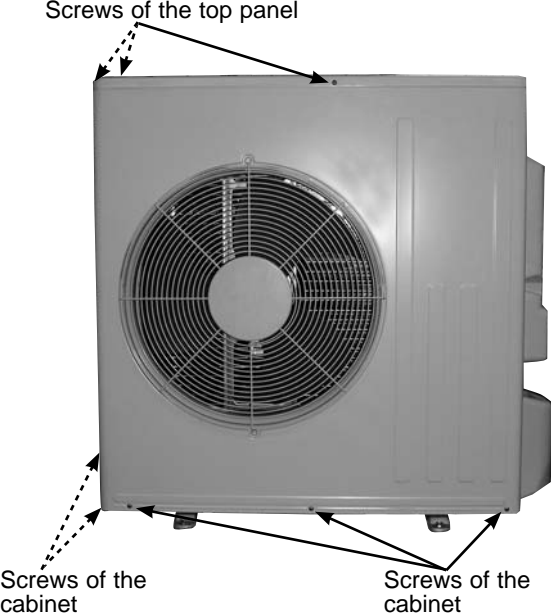


#### Photo 7



## 12-2. MUZ-FH50VE

**NOTE:** Turn OFF power supply before disassembly.

| OPERATING PROCEDURE  | PHOTOS   |
|--|--|
| <p><b>1. Removing the cabinet</b></p> <ol style="list-style-type: none"><li>(1) Remove the screws of the service panel.</li><li>(2) Remove the screws of the top panel.</li><li>(3) Remove the screw of the valve cover.</li><li>(4) Remove the service panel.</li><li>(5) Remove the top panel.</li><li>(6) Remove the valve cover.</li><li>(7) Disconnect the power supply and indoor/outdoor connecting wire.</li><li>(8) Remove the screws of the cabinet.</li><li>(9) Remove the cabinet.</li><li>(10) Remove the screws of the back panel.</li><li>(11) Remove the back panel.</li></ol> <p><b>Photo 2</b></p>  <p>Screws of the top panel</p> <p>Screw of the back panel</p> <p>Screws of the cabinet</p> <p>Screws of the cabinet</p> <p>Screw of the valve cover</p> <p>Screws of the service panel</p> <p>Screws of the back panel</p> | <p><b>Photo 1</b></p>  <p>Screws of the top panel</p> <p>Screws of the cabinet</p> <p>Screws of the cabinet</p> |

## OPERATING PROCEDURE

### 2. Removing the inverter assembly, inverter P.C. board and relay P.C. board

- (1) Remove the cabinet and panels. (Refer to 1.)
- (2) Disconnect the lead wire to the reactor and the following connectors:
  - <Inverter P.C. board>
  - CN602 (R.V. coil)
  - CN931, CN932 (Fan motor)
  - CN671 (Defrost thermistor, discharge temperature thermistor and outdoor heat exchanger temperature thermistor)
  - CN672 (Ambient temperature thermistor)
  - CN724 (LEV)
- (3) Remove the compressor connector.
- (4) Remove the screws fixing the relay panel.
- (5) Remove the relay panel.
- (6) Remove the earth wires and the lead wires of the inverter P.C. board.
- (7) Remove the screws of the P.B. support.
- (8) Remove the inverter P.C. board from the relay panel.
- (9) Disconnect the following connectors:
  - <Relay P.C. board>
  - CN60 (Terminal block)
  - CN680 (Inverter P.C. board)
  - TAB65 (Inverter P.C. board)
  - TB71
- (10) Remove the screws fixing the P.B. holder.
- (11) Remove the relay P.C. board from the P.B. holder.

### 3. Removing R.V. coil

- (1) Remove the cabinet and panels. (Refer to 1.)
- (2) Disconnect the following connector:
  - <Inverter P.C. board>
  - CN602 (R.V. coil)
- (3) Remove the R.V. coil.

## PHOTOS

Photo 3

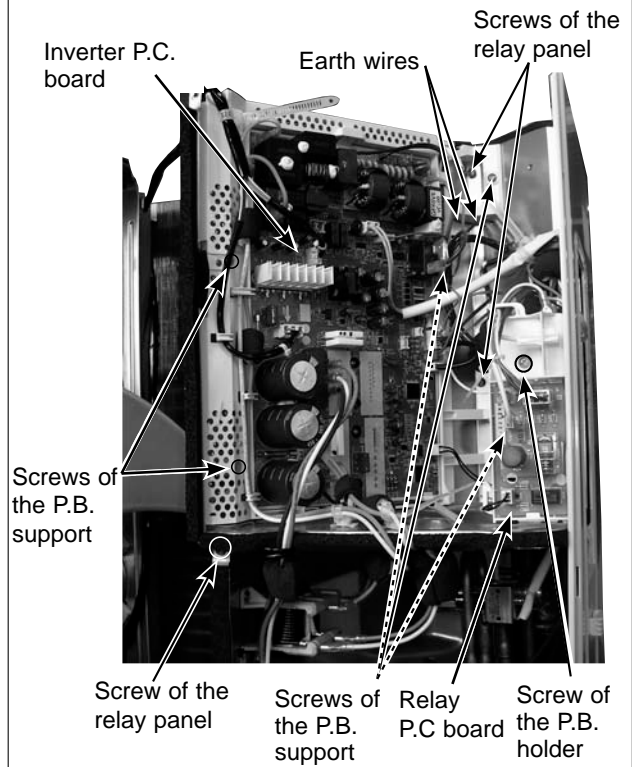


Photo 4



## OPERATING PROCEDURE

### 4. Removing the discharge temperature thermistor, defrost thermistor, outdoor heat exchanger temperature thermistor and ambient temperature thermistor

- (1) Remove the cabinet and panels. (Refer to 1.)
- (2) Disconnect the lead wire to the reactor and the following connectors:  
<Inverter P.C. board>  
CN671 (Defrost thermistor, discharge temperature thermistor and outdoor heat exchanger temperature thermistor)  
CN672 (Ambient temperature thermistor)
- (3) Pull out the discharge temperature thermistor from its holder. (Photo 7)
- (4) Pull out the defrost thermistor from its holder.
- (5) Pull out the outdoor heat exchanger temperature thermistor from its holder.
- (6) Pull out the ambient temperature thermistor from its holder.

### 5. Removing outdoor fan motor

- (1) Remove the top panel, cabinet and service panel. (Refer to 1.)
- (2) Disconnect the following connectors:  
<Inverter P.C. board>  
CN931 and CN932 (Fan motor)
- (3) Remove the propeller.
- (4) Remove the screws fixing the fan motor.
- (5) Remove the fan motor.

### 6. Removing the compressor and 4-way valve

- (1) Remove the top panel, cabinet and service panel. (Refer to 1.)
- (2) Remove the back panel. (Refer to 1.)
- (3) Remove the inverter assembly. (Refer to 2.)
- (4) Recover gas from the refrigerant circuit.  
**NOTE:** Recover gas from the pipes until the pressure gauge shows 0 kg/cm<sup>2</sup> (0 MPa).
- (5) Detach the brazed part of the suction and the discharge pipe connected with compressor.
- (6) Remove the compressor nuts.
- (7) Remove the compressor.
- (8) Detach the brazed parts of 4-way valve and pipe. (Photo 4)

## PHOTOS

Photo 5

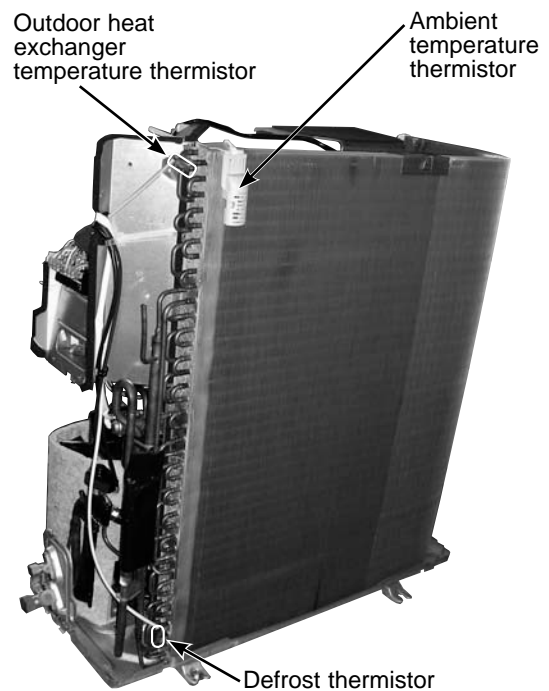


Photo 6

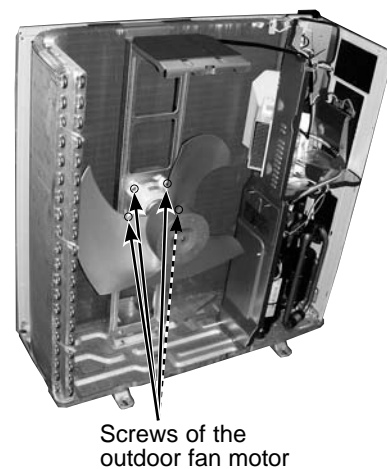
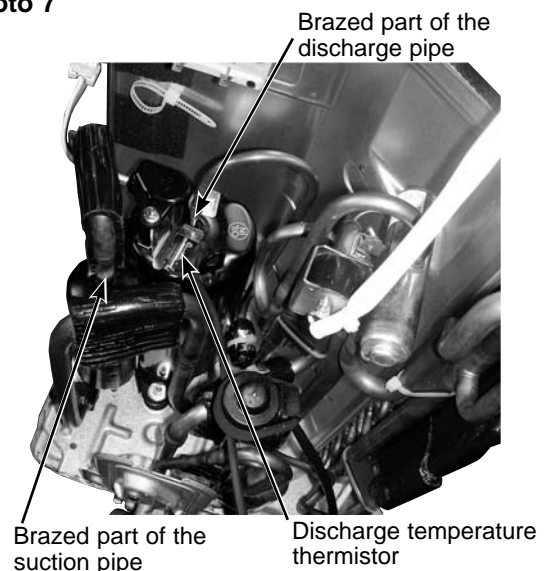


Photo 7





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